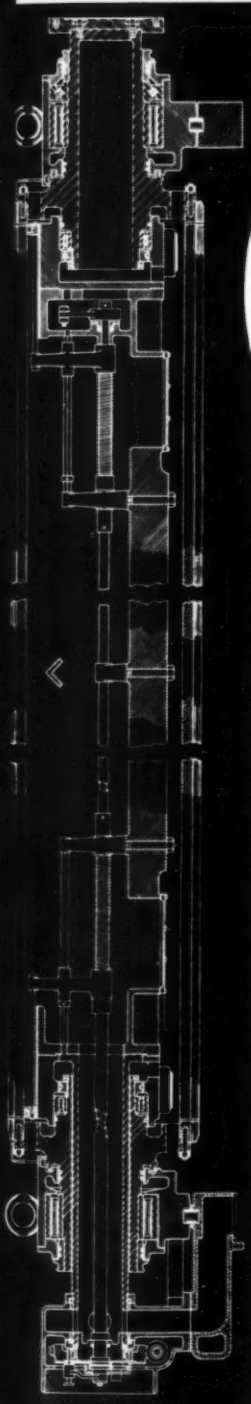
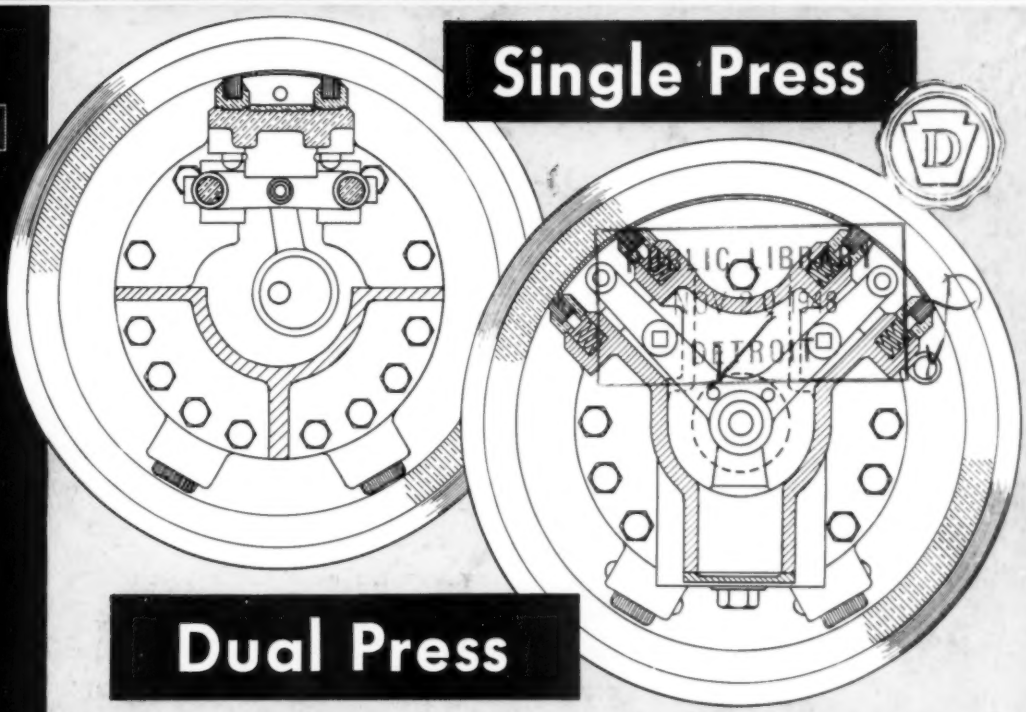
TECHNOLOGY DEPARTMENT

THE PAPER INDUSTRY and PAPER WORLD

AN EDUCATIONAL NEWS MAGAZINE—NOVEMBER, 1948





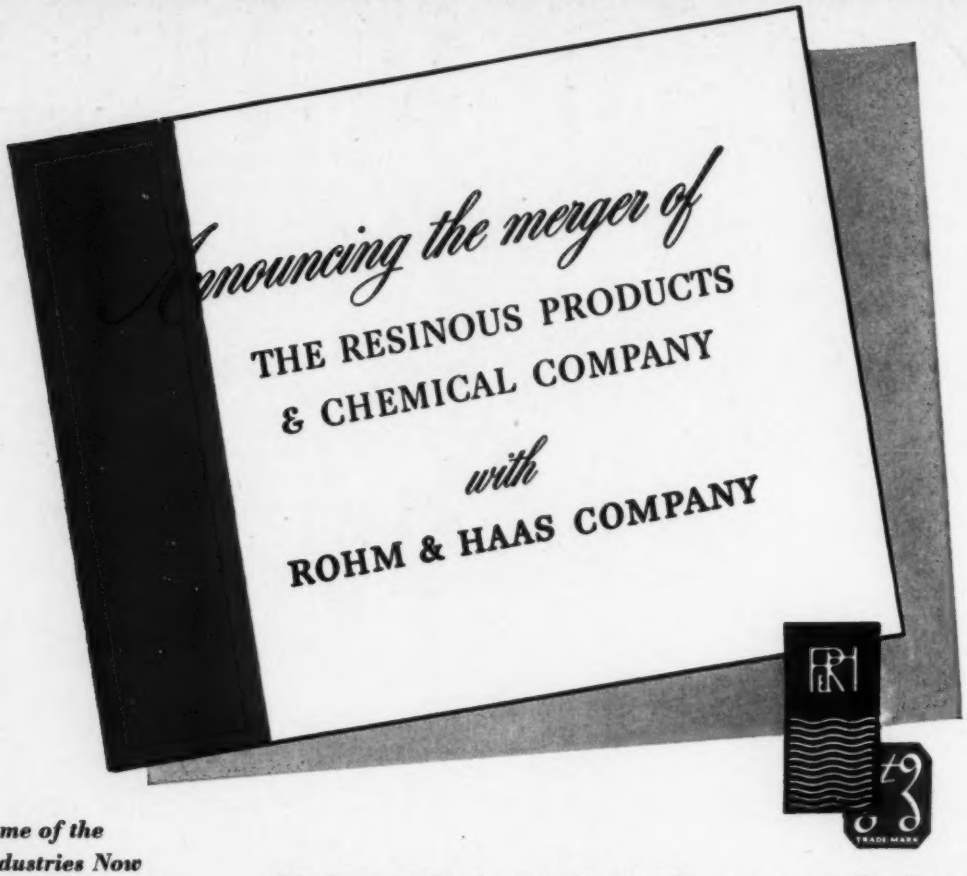
MODERN SUCTION PRESSES FOR EVERY REQUIREMENT

Downingtown Rubber Covered Suction Press Rolls are made with one suction box for a Single Press and are provided with multiple suction boxes as required for Dual Press and Triple Press applications. Suction connection may be at the front end, rear end or at both ends, if required. Front end suction may be inside or outside the machine frame. Write us for more information and a quotation on any type of suction press. All types are standard and deliveries are good.

DOWNINGTOWN MANUFACTURING CO., DOWNINGTOWN, PA.

Oldest Manufacturer of Modern Suction Rolls

DOWNINGTOWN
Designers & Builders Paper Making Machinery



Some of the Industries Now Served by the Combined Companies

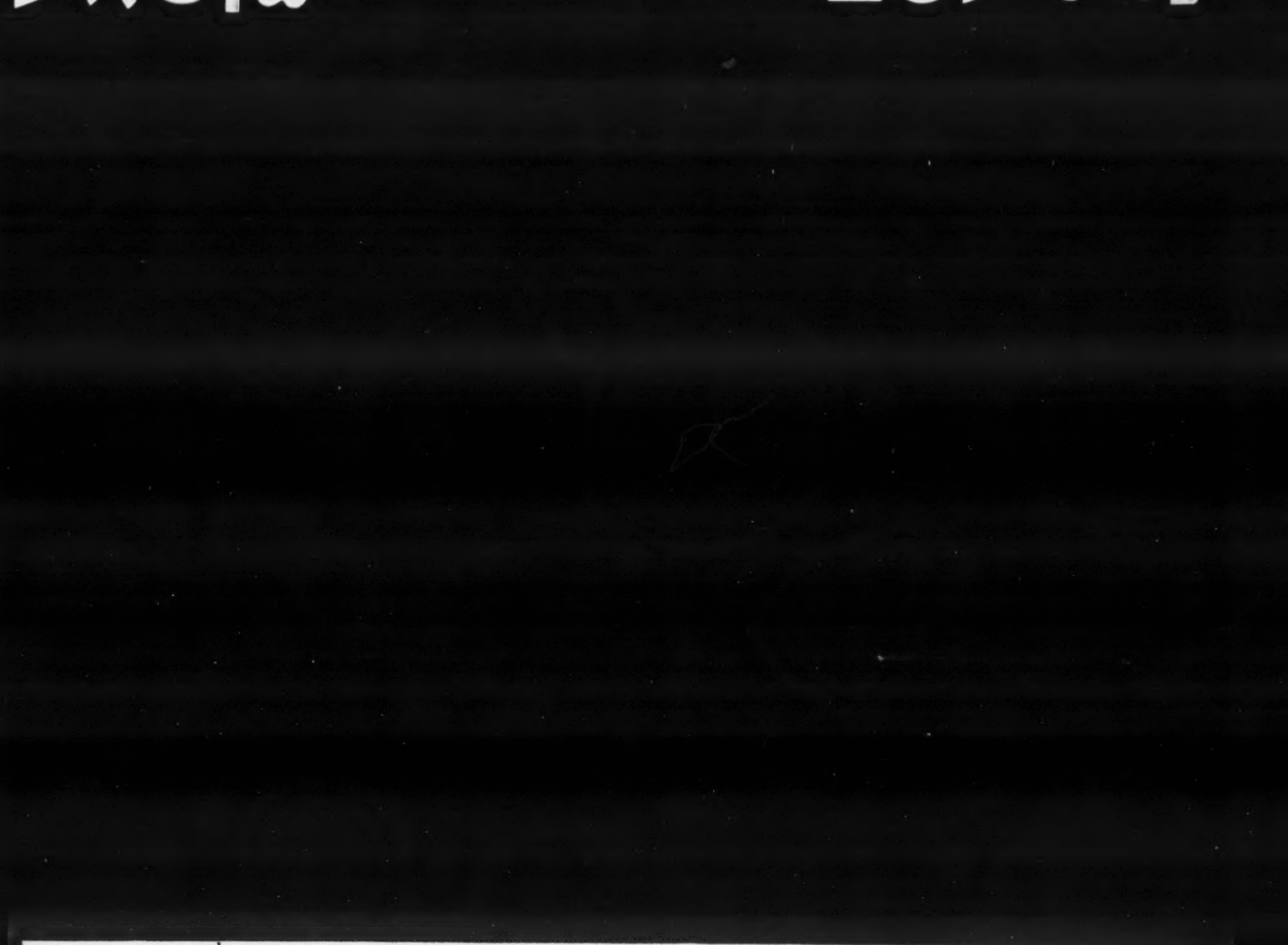
Coatings
Printing Ink
Floor Coverings
Plywood
Paper
Rubber
Plastics
Water Conditioning
Chemical Processing
Pharmaceutical
Textile
Leather
Agricultural and Sanitary Chemicals

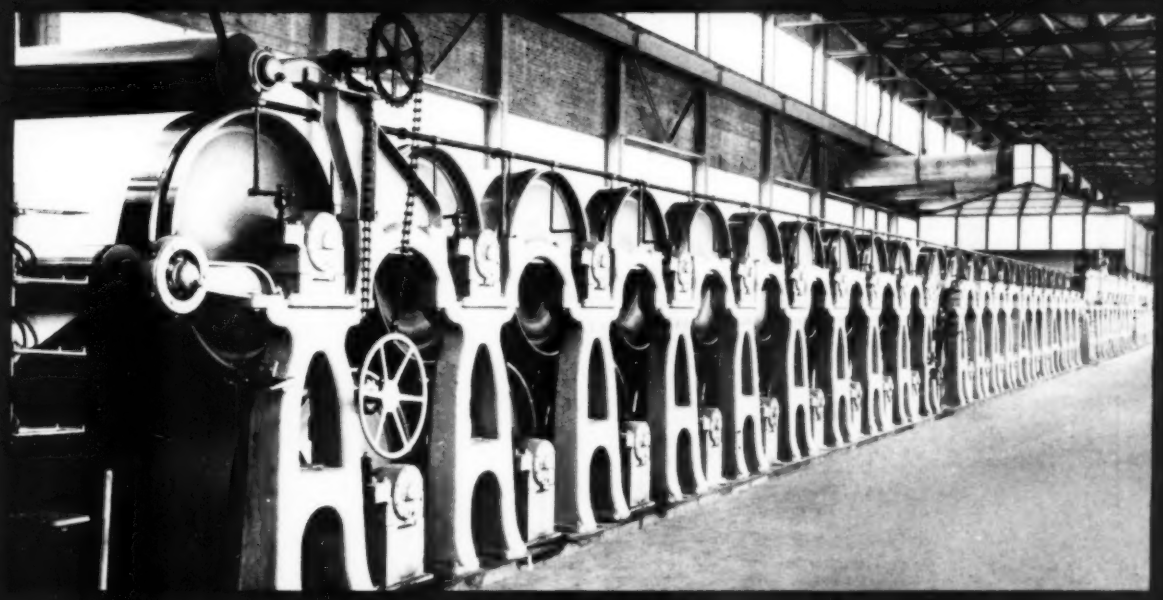
The Resinous Products & Chemical Company is now The Resinous Products Division of Rohm & Haas Company, a merger which further strengthens the close bonds which have always existed between the two companies. No change in company policies will result from this joining of forces; the officers and executives of both companies who have worked together throughout the past 22 years will remain in their present functions.

In 1926, when The Resinous Products & Chemical Company was founded, the fields of activities of the companies were quite distinct and their separate existence permitted the fullest cooperation. But, as the companies grew with the expanding synthetic resin and plastic industry, it became apparent that the best interests of our customers would be served by combining the two organizations.

The customers of both companies will benefit from the coordinated laboratory program, the simplification of production, and other economies afforded by the joining of the two organizations. We are confident that the consolidation will enable us to serve our customers still more efficiently in the years to come.

All correspondence should now be directed to Rohm & Haas Company, The Resinous Products Division, Washington Square, Philadelphia 5, Pa.





"The Angel" of Angell Street

Completion of a huge pulp and board mill expansion program by the Michigan Carton Company, Battle Creek, Michigan, was marked by the recent start-up of the new Angell Street mill. Michigan Carton's new Beloit 140" eight-cylinder machine, "The Angel," embodies the most modern developments for the manufacture of high-quality folding box board.

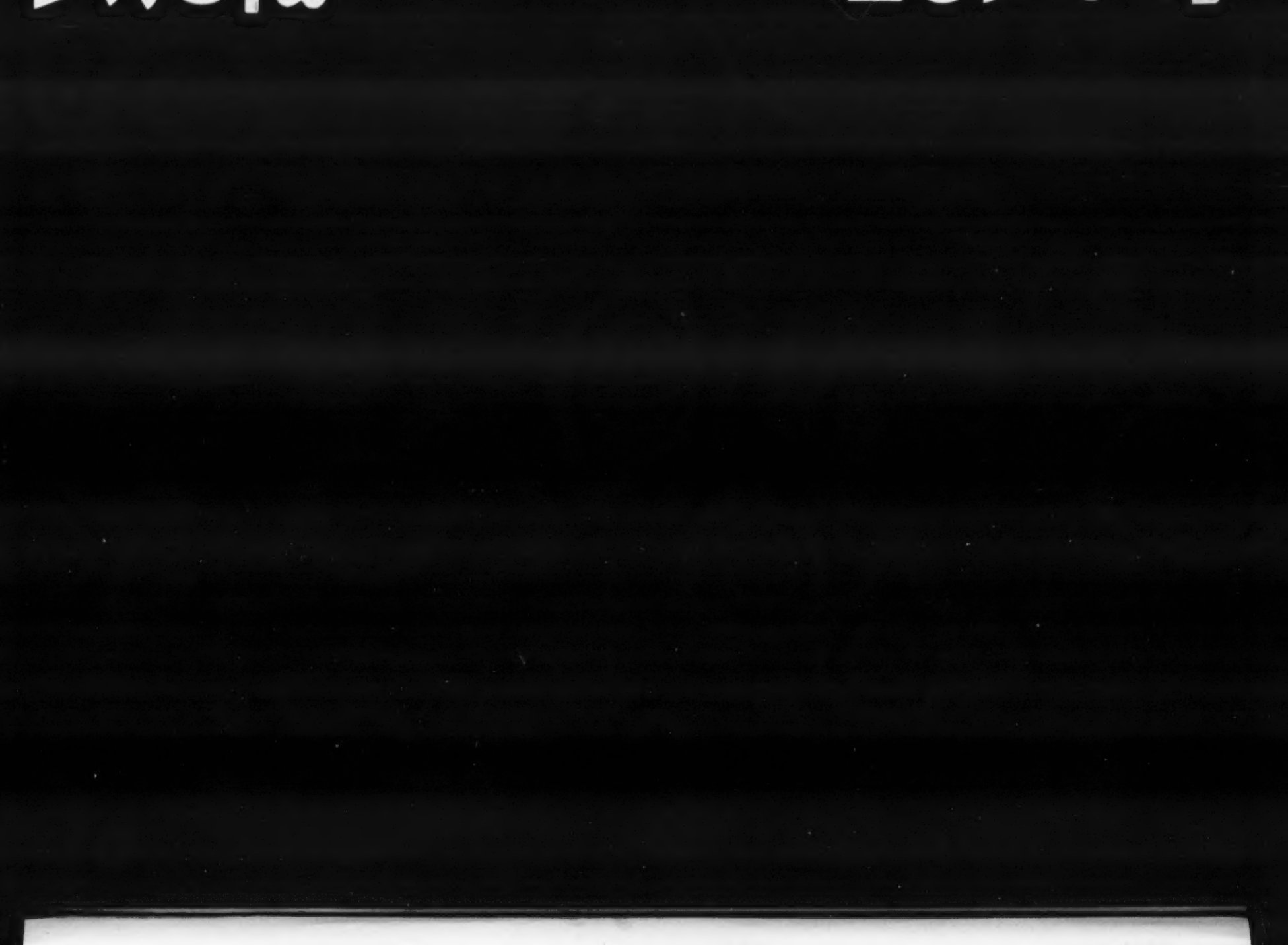
BELOIT IRON WORKS, BELOIT, WISCONSIN

TENAX FELTS ARE LONG LASTING

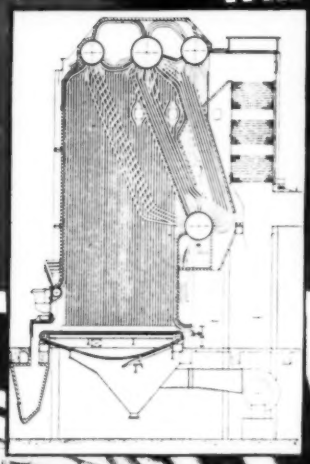
SERVING THE PAPER INDUSTRY SINCE 1891

If you have not as yet put Tenax Felts to the test—or our service to the proof—we invite you to afford us that opportunity.

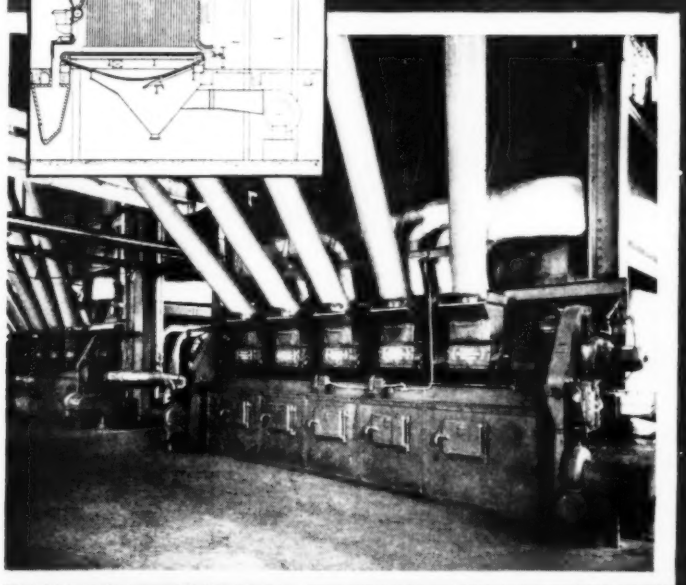
LOCKPORT FELT COMPANY • NEWFANE, NEW YORK



DETROIT ROTOGRATE STOKERS Will Cut the Cost of Producing Steam In These Paper Mills



150,000 pound units with Detroit RotoGrate Stokers—Consolidated Paper Company, South Side Plant, Monroe, Michigan



Fuel economy and recognized ability to handle high capacities and widely fluctuating loads has made the Detroit RotoGrate Stoker popular with Paper Mills.

A spreader type with grates that move slowly forward to continuously discharge the ash at the front. Successfully burns all grades of coal and Lignites. No special fuel preparation necessary.

Backed by over ten years' experience building Detroit RotoGrate Stokers. Our Engineering Department at your service—no obligation. Write for Bulletin.

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Appleton, Wisconsin
Chillicothe Paper Co.
Chillocothe, Ohio
Consolidated Paper Co.
Monroe, Michigan (Two Contracts)
Flambeau Paper Company
Park Falls, Wis.
Fletcher Paper Company
Alpena, Michigan
The Great Northern Paper Co.
Millinocket, Maine
Hoberg Paper Mills, Inc.
Green Bay, Wisconsin
International Paper Co.
Panama City, Fla.
Manitoba Paper Co. Ltd.
Pine Falls, Manitoba
Michigan Carton Company
Battle Creek, Mich.
Michigan Paper Company
Plainwell, Michigan
Northwest Paper Company
Cloquet, Minnesota (Two Contracts)
Rex Paper Company
Kalamazoo, Michigan
River Raisin Paper Co.
Monroe, Michigan
Schmidt & Ault Paper Co.
York, Pennsylvania
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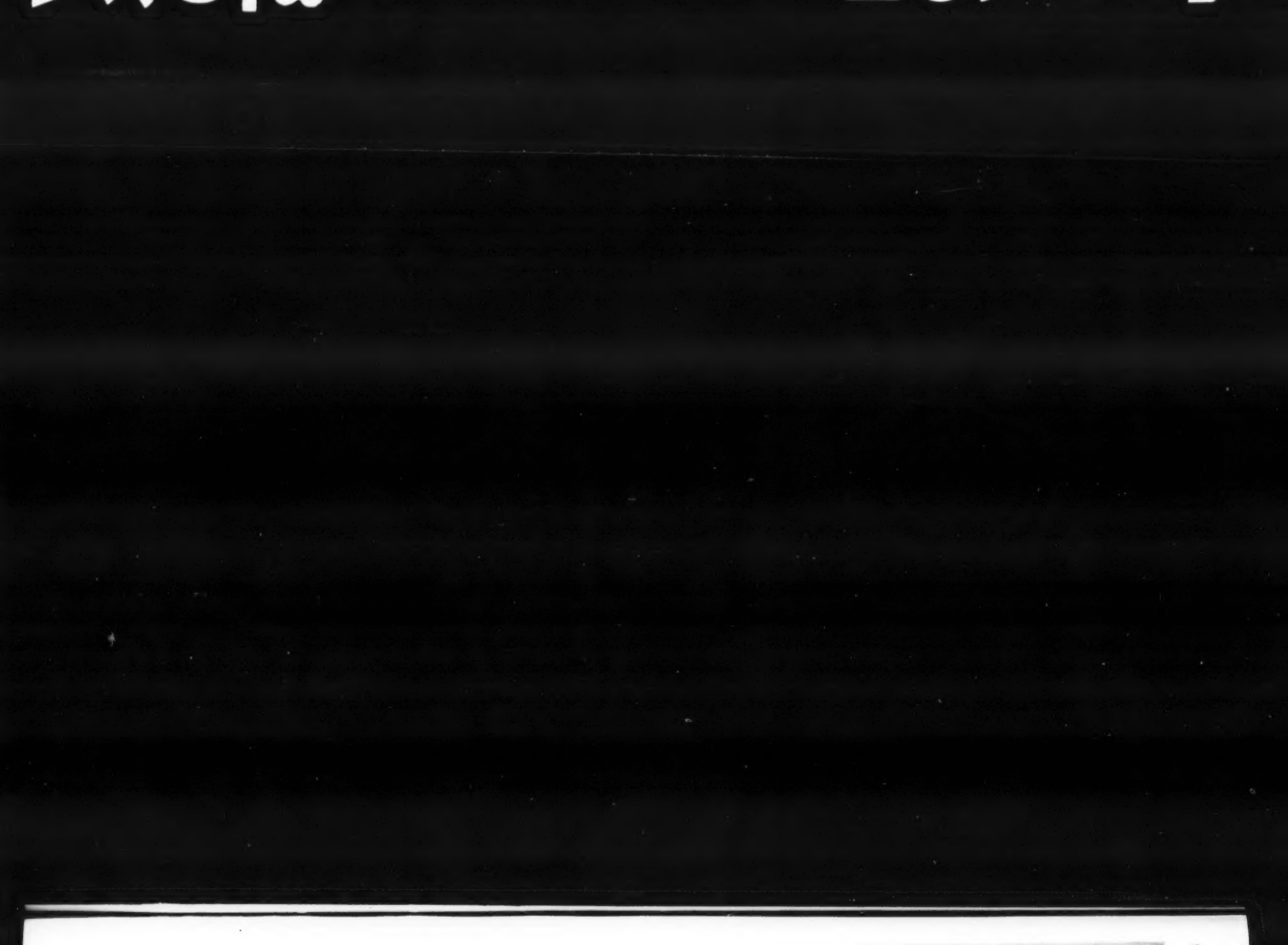

THE PAPER INDUSTRY and PAPER WORLD

(Reg. U. S. Pat. Off.)

VOLUME 30 - - - - NOVEMBER, 1948 - - - - NUMBER 8

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from

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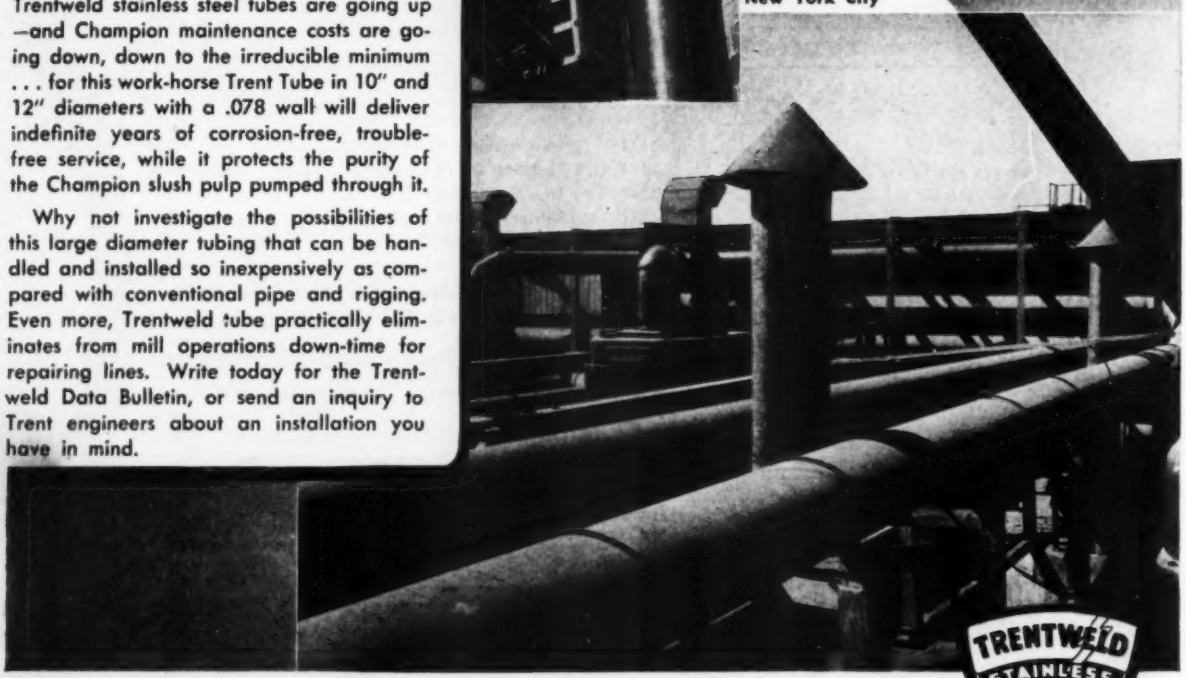
A quick glance will tell you what's happening here — at the new Champion Paper and Fibre Company mill under construction at Pasadena, Texas. Rugged, lightweight Trentweld stainless steel tubes are going up —and Champion maintenance costs are going down, down to the irreducible minimum . . . for this work-horse Trent Tube in 10" and 12" diameters with a .078 wall will deliver indefinite years of corrosion-free, trouble-free service, while it protects the purity of the Champion slush pulp pumped through it.

Why not investigate the possibilities of this large diameter tubing that can be handled and installed so inexpensively as compared with conventional pipe and rigging. Even more, Trentweld tube practically eliminates from mill operations down-time for repairing lines. Write today for the Trentweld Data Bulletin, or send an inquiry to Trent engineers about an installation you have in mind.

Engineers —
Ebasco Services Inc.
New York City



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Michigan Carton wins the plaudits of the entire industry for the expertly-planned new 350-ton mill recently placed in operation at Battle Creek.

And it goes without saying that, having furnished the entire stock-preparatory systems, Shartle and Dilts are proud to have made an important contribution to this development.

Michigan Carton—*again, our sincere congratulations.*

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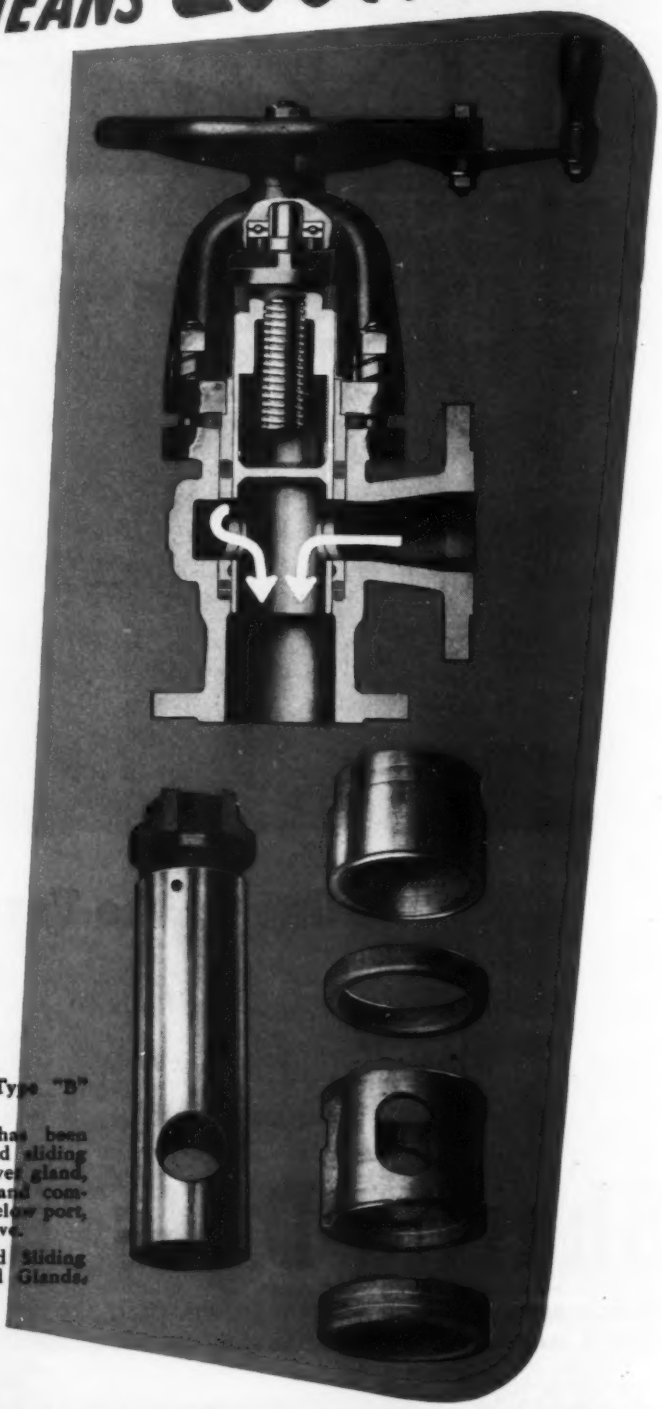

(*Above*)—Cross section of Type "B" Seatless Angle Valve, flanged.

OPERATION: After valve has been closed, shoulder on balanced sliding plunger contacts upper follower gland, forcing it down into body and compressing packing above and below port, making an absolutely tight valve.

(*Below*)—Type "B" Balanced Sliding Plunger, Packing Rings and Glands.

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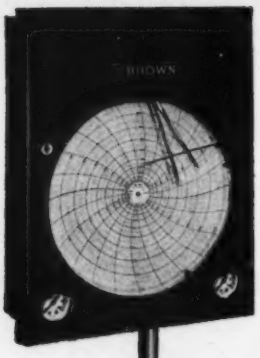

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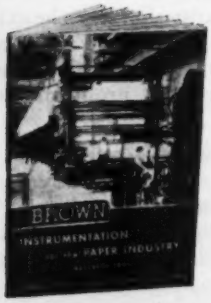

INSTRUMENTATION for the PAPER INDUSTRY

This free 80-page book is a virtual handbook covering the instrumentation of all important paper mill processes. It contains 28 schematic drawings as well as page after page of informative data. Write for Bulletin 2801.

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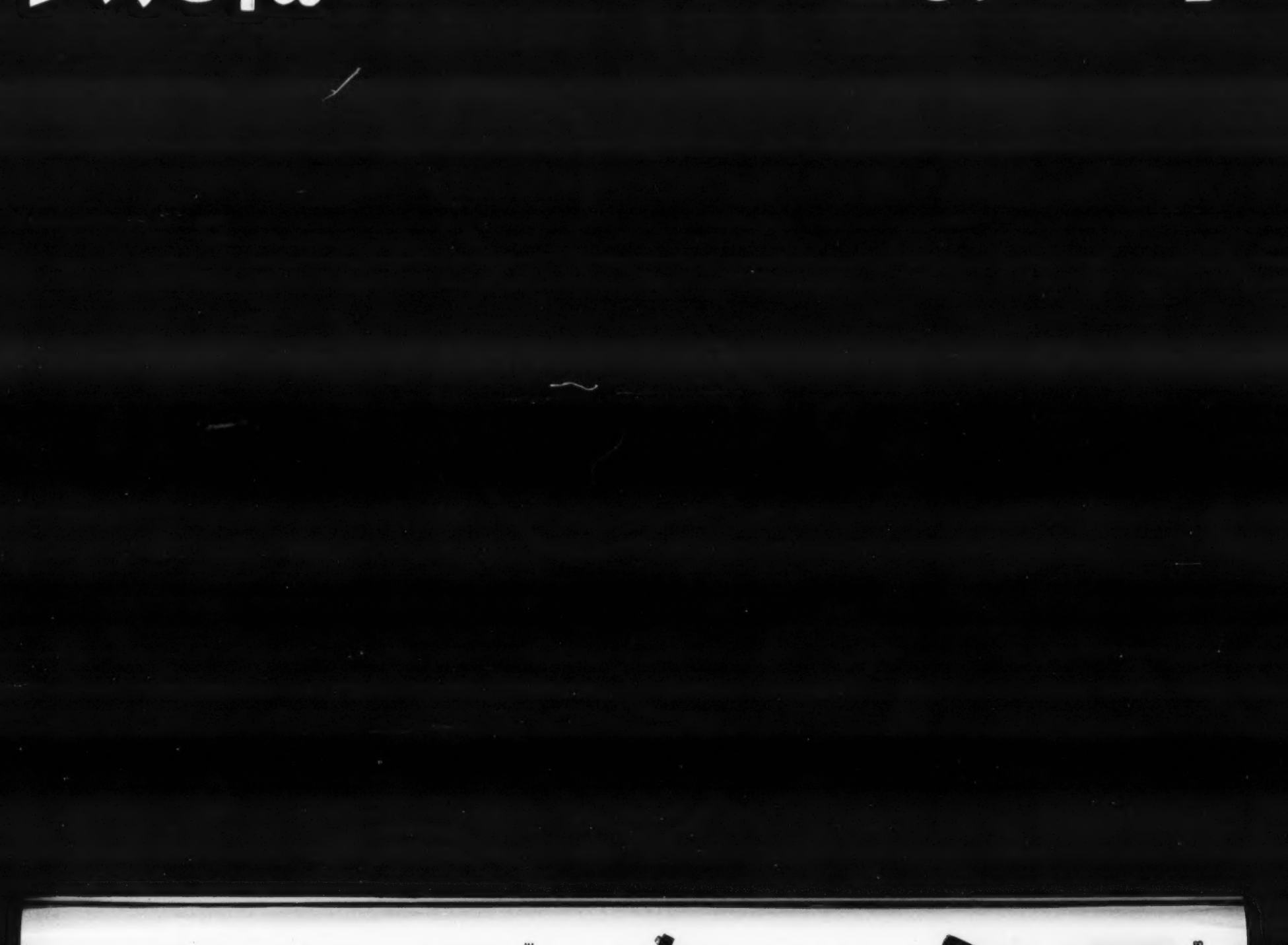
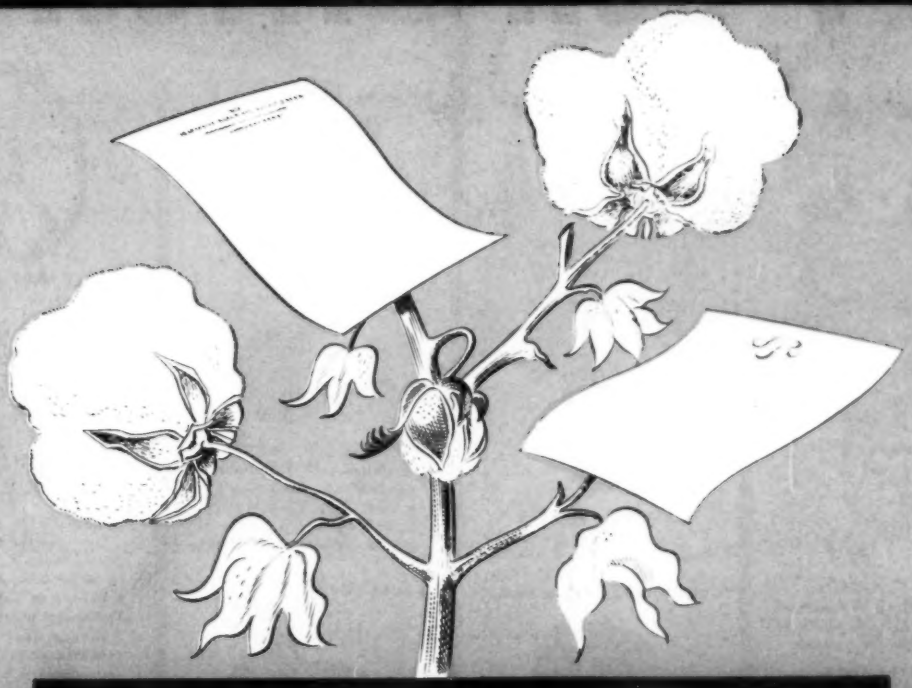


in high quality paper the trend is to



cotton linters

Good usable cotton rags for papermaking are getting scarcer, more costly every day. But papermakers do not have to accept less satisfactory substitutes. Hercules Bleached Cotton Linters are rapidly gaining acceptance as high quality extenders for rags. Their performance in rag-content writing papers, for example, is well known. Their clean virgin fibers contribute good color, permanence, feel, bulk, opacity, and sheet structure to the paper. Write for helpful technical information on adapting Hercules Bleached Cotton Linters to your paper processing.

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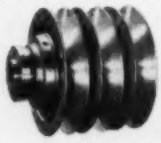

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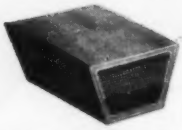

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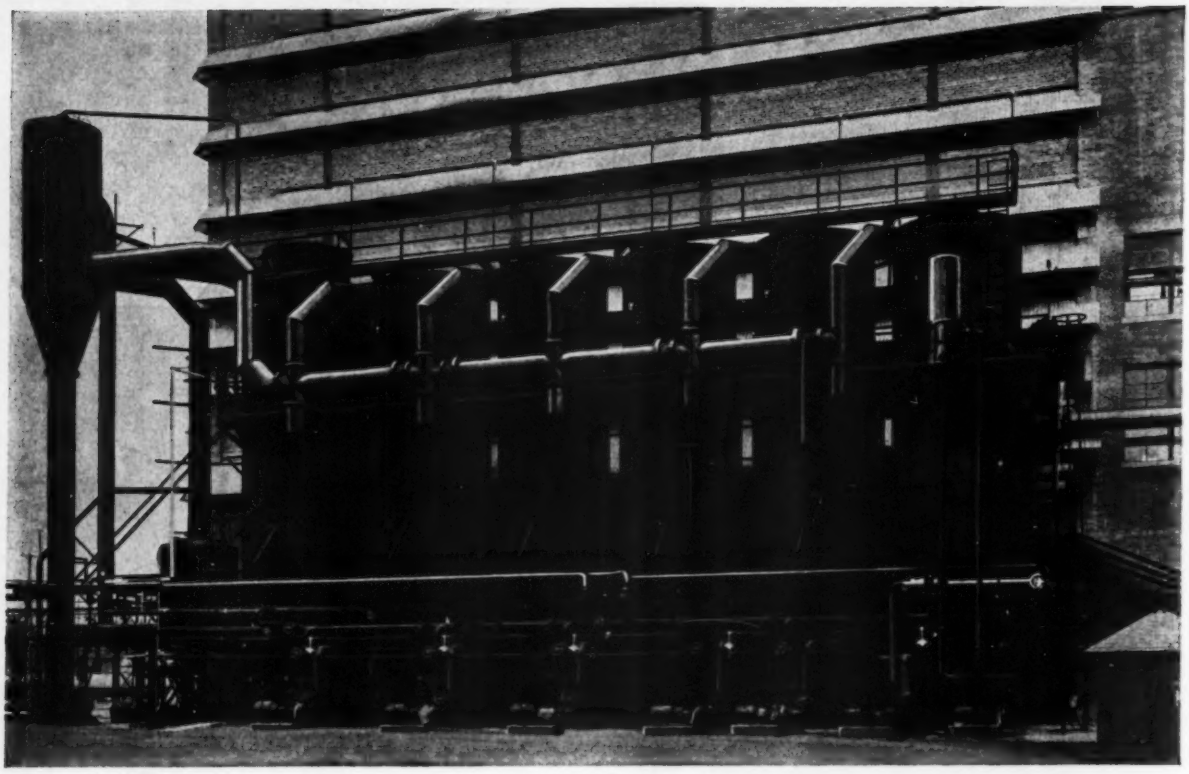
SETTING THE PACE IN CHEMICAL PURITY SINCE 1882

*Complete stocks are carried here.



One of the largest SINGLE EVAPORATOR INSTALLATIONS in the U.S. is at the new plant of the SOUTHERN PAPERBOARD CORPORATION

Containing 63,000 sq. ft. of heating surface, this unit—a Conkey Self-Supporting Sextuple Effect Long Tube Film Type Evaporator—is concentrating black liquor.

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- Lower pressure drop between effects.
- Simplicity of operation.
- Goes on the line quickly.
- Reduces overall down-time.

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GENERAL AMERICAN TRANSPORTATION CORPORATION

Process Equipment Division

SALES OFFICE: 10 East 49th St., Dept. 820b, New York 17, N. Y.

WORKS: Sharon, Pa., East Chicago, Ind.

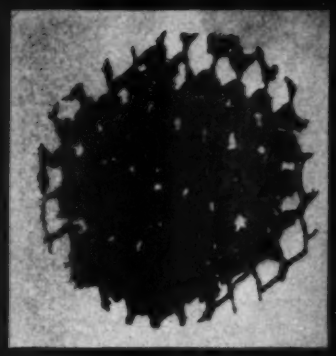
OFFICES: Chicago, Cleveland, Louisville, Orlando, Pittsburgh, St. Louis, Salt Lake City, Sharon, Washington, D. C.

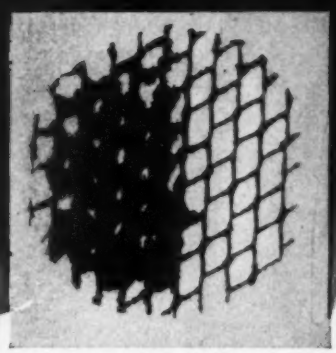
PROCESS EQUIPMENT DIVISION GENERAL TRADE MARK

announcing.

SR-150

THE SOOT REMOVER THAT REMOVES SOOT!





Same screen as above after temperature rise to 775° F—the treated soot has burned off; untreated coal soot usually burns at about 1135° F.

For the first time, a *scientifically-developed* soot remover that REMOVES SOOT! Nalco SR-150 is the result of years of research, development, and thorough plant tests by Nalco scientists and an independent research organization. Nalco SR 150 removes soot from boiler surfaces by lowering its ignition temperature so that it burns off at normal furnace operating temperatures.

Soot removal with Nalco SR-150 is accomplished with the furnace operating as usual—no need to provide special firing conditions or take boilers off the line. For large furnaces, Nalco has developed an efficient SR-150 feeder—so simple it can be built in most plant maintenance shops. For small furnaces, SR-150 can be fed directly with the fuel, either hand or stoker fired.

Next best news to Nalco SR-150's guaranteed soot removal ability is a price so low that any other method of keeping heat transfer surfaces clean and flues clear is an extravagance by comparison.

Call your Nalco Representative today, or write direct for complete data and prices on Nalco SR-150 . . . the soot remover that REMOVES SOOT!

DEVELOPMENT REPORT AVAILABLE

The story of Nalco SR-150 development, abstracted from progress reports by an independent research organization. Gives the true facts on chemical soot removal . . . its past failures and partial successes . . . and the reasons why SR-150 has earned a place with other Nalco Quality Products. Your copy sent without obligation on request to Nalco.

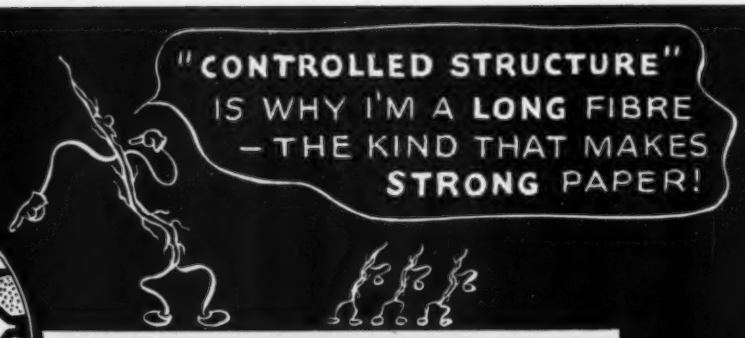
NATIONAL ALUMINATE CORPORATION

6232 West 66th Place • Chicago 38, Illinois

Canadian inquiries should be addressed to Alchem, Limited, 555 Eastern Avenue, Toronto, Ontario

Nalco

- - - Serving Industry through Practical Applied Science



Diagrammatic sketch of Norton Pulpstone showing the uniform, controlled grain spacing that produces long, uniform fibers.

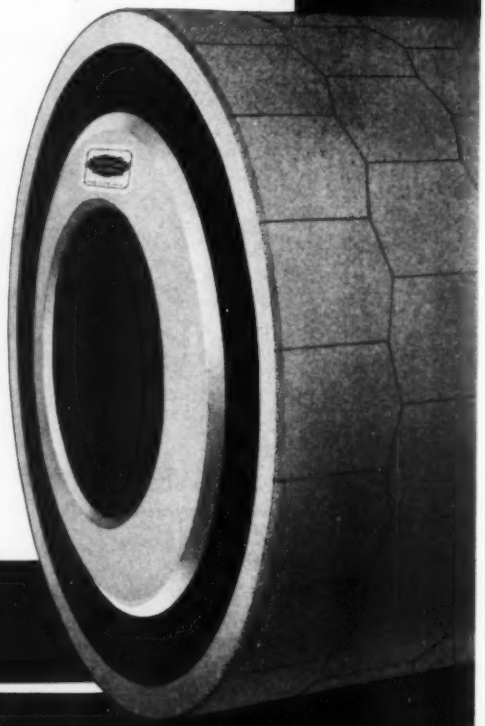
CONTROLLED STRUCTURE is a *Patented* Norton Development

IT takes long, well-fibrillated fibers to make strong paper. And it takes a pulpstone with just the right grain spacing to make such fibers. That grain spacing is not always the same either. It must be different for different types of wood, for different types of grinders.

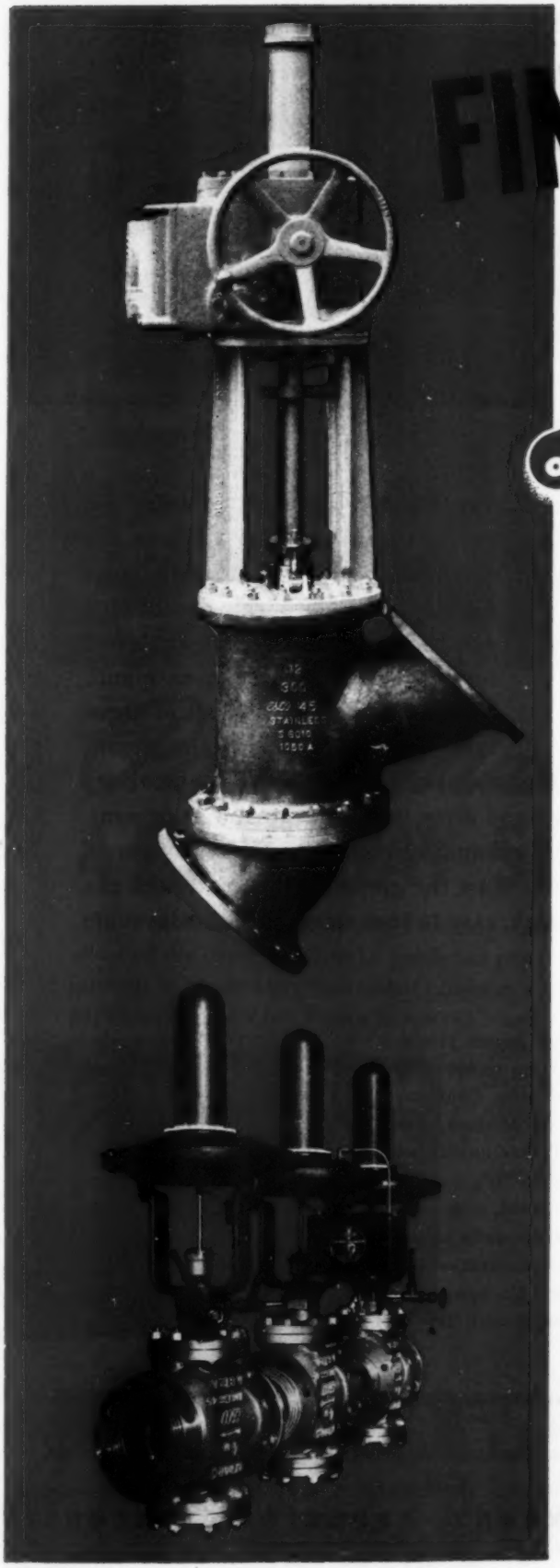
That's why Norton "Controlled Structure" is important to producers of mechanical pulp. This patented Norton development makes it possible to accurately regulate the spacing of the grains in the stone — to provide just the right grain spacing to produce long, fibrillated fibers from your kind of wood with your kind of grinders.

Norton engineering service is available to study your requirements and prescribe Norton Pulpstones in just the right specifications—not only in structure but also in the kind of abrasive, the grain size and the stone hardness.

NORTON COMPANY, Worcester 6, Mass.
Norton Company of Canada Ltd., Hamilton, Ontario



NORTON ABRASIVES



FINGERTIP CONTROL

of inaccessible valves

Some of your valves may be hard to get at, but they needn't be hard to operate. Remote control provided by *ESCO* special control valves make them as easy to operate as the most accessible valve in the system.

ESCO special control valves can be equipped to operate by electric motors, hydraulic or air pressure.

Long service life, low maintenance costs and easy, trouble-free operation are assured by these valves. They are made of corrosion resisting stainless steel, and embody such approved design features as outside screw and yoke construction, high disc lift, smooth disc contours, unrestricted port openings, and large diameter seats.

ESCO is prepared to design and make other special valves for specific conditions; or *ESCO* will make them to the specifications of your own engineers. For further information, consult the nearest *ESCO* representative, or fill in and mail the coupon below. Electric Steel Foundry, 2151 N.W. 25th Avenue, Portland 10, Oregon. Offices in Eugene, Oregon; Chicago, Honolulu, Los Angeles, New York City, San Francisco, Seattle and Spokane. In Canada, ESCO Limited, Vancouver, B.C.

ELECTRIC STEEL FOUNDRY
2151 N.W. 25th Avenue, Portland 10, Oregon

Please give us further information on ESCO special controlvalves.

Name.....

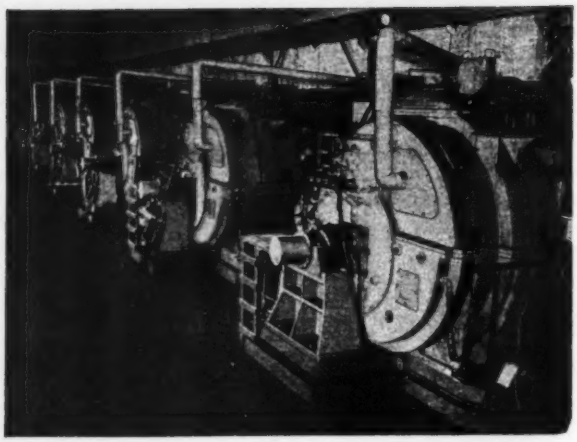
Address..... **Zone**.....

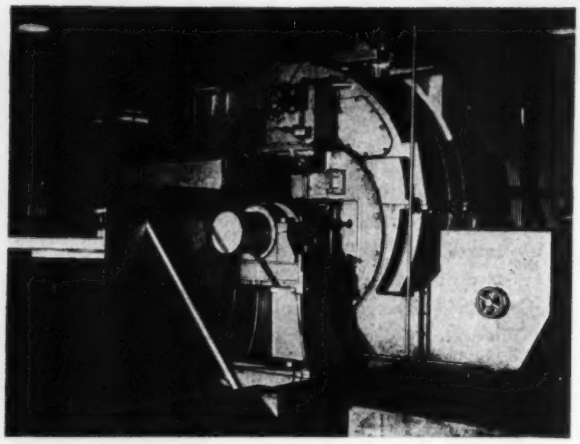
City..... **State**.....

ESCO

STAINLESS STEEL EQUIPMENT FOR THE PROCESS INDUSTRY

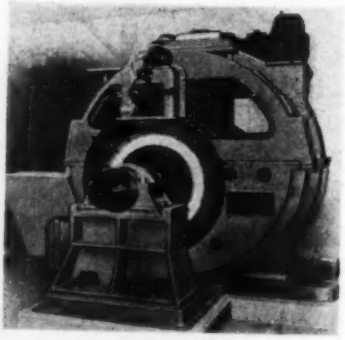
NO MORE MESSY STEAM-FILLED GRINDER ROOMS





The Roberts Grinder provides improvements from every angle in the manufacture of groundwood pulp. Cleaner and safer working conditions and better appearance are angles of some importance in the modern mill. Roberts Grinders bring all of them into the grinder room along with higher standards of efficiency for producing mechanical pulp. Grinding operations are all-enclosed, eliminating pulp leakage and dirty, messy floors and equipment. All steam and vapors are drawn off by an exhaust system. Wood conveyors are a big help in mantaining good housekeeping. Now the groundwood department can be a safer and more healthful place to work, easy to keep clean. The grinder room even becomes a show place of the mill.

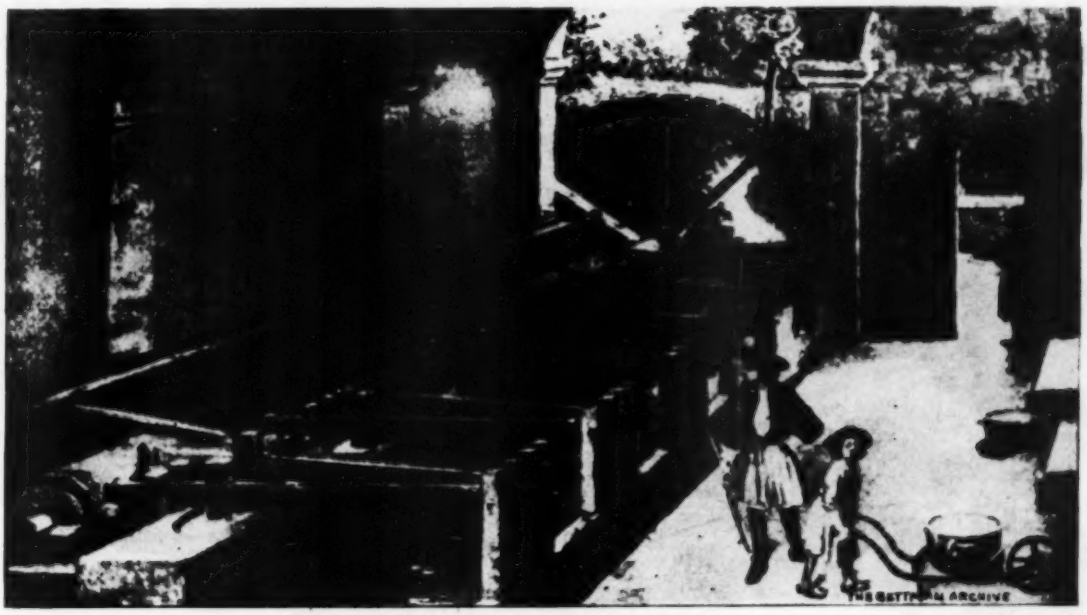
One Roberts Grinder replaces three or four pocket grinders. High-speed operation, stone surface speeds up to 5000 feet a minute, cuts manufacturing costs per ton of pulp. Continuous production, with no interruptions in the flow of stock, grinds pulp of more uniform consistency and higher quality with less waste. Easy loading helps save up to 70% in labor. Grinds any grade of pulp, any kind of pulpwood, with greater active grinding area helping to produce large daily tonnage. Grinding four or five foot wood cuts wood preparation costs. Automatic load control. No shim pulling. No extra equipment. Installed in place of pocket grinders with few mill changes.



ROBERTS GRINDER

THE APPLETON MACHINE COMPANY · APPLETON · WISCONSIN

Eastern Sales: CASTLE & OVERTON, Inc., 630 Fifth Avenue, New York • Western Sales: PACIFIC COAST SUPPLY CO., San Francisco, Portland



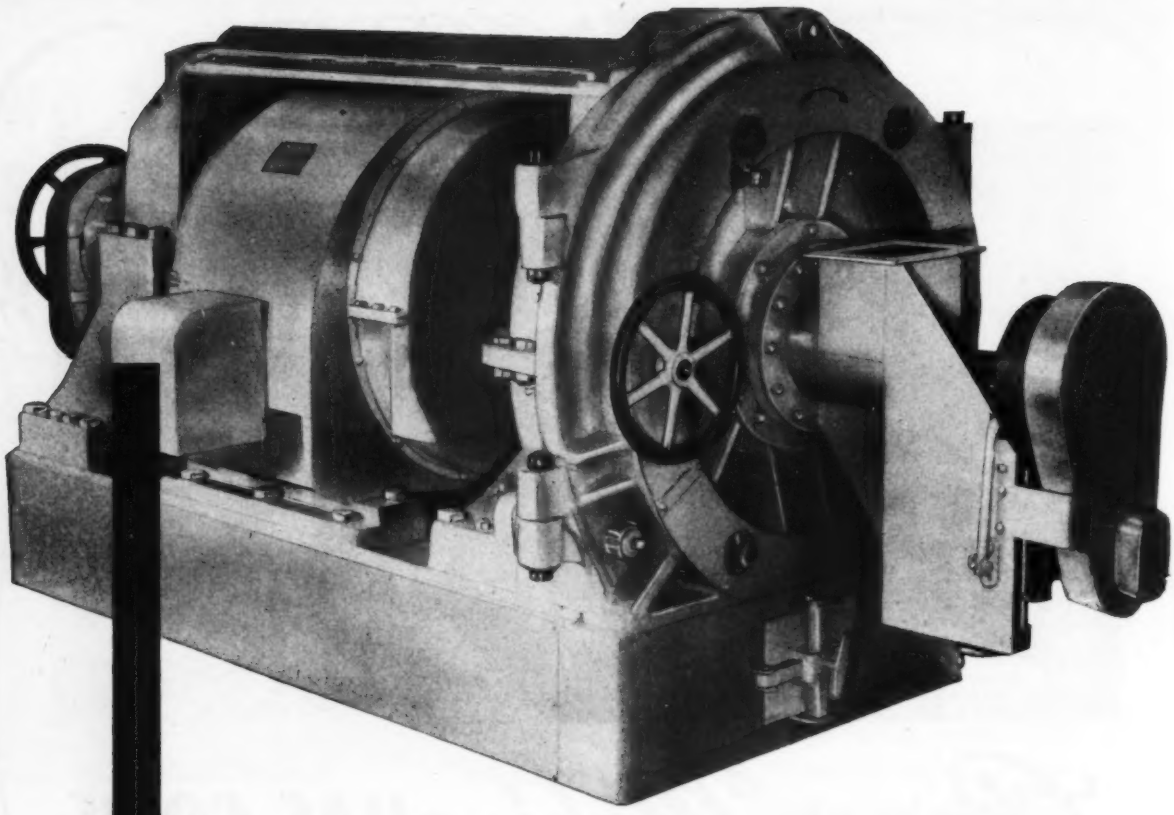
Paper Making HAS COME A LONG WAY SINCE *1740* ~

In 1740 it was the art of paper making, and production was limited to the individual effort of the paper maker who produced paper sheet by sheet. This was an art, but the beginning of an industry that today produces tons of paper instead of sheets. In 1740 the paper maker used felt layers to remove water from the sheets. As his art developed into an industry, felts developed with the industry, always keeping pace with production methods. Since 1890 Appleton felts have kept pace with paper making . . . that's why today they are preferred by mills everywhere.

This is one of a series depicting early history of paper making.

APPLETON WOOLEN MILLS

APPLETON
WISCONSIN



A PULP REFINER . . . by Sprout-Waldron — is your assurance of higher tonnage per unit, together with lower power consumption.

Rugged and precision-built, a Sprout-Waldron Refiner weighs over 15,000 lb. Yet, required installation space is only 10' 3¼" x 4' 9½" x 5' 2¾".

Micrometer adjustments and variously designed fillings give positive and accurate operational control at all times.

Wherever wood pulp refining is a vital operation—from defiberizing semi-chemical to hydrating fully cooked pulps — consider Sprout-Waldron Refiners.

Other Sprout-Waldron machines in the Pulp and Paper Mill Industry are:

(1) Double Agitated Mixers — designed especially for efficient and economical pulp blending;

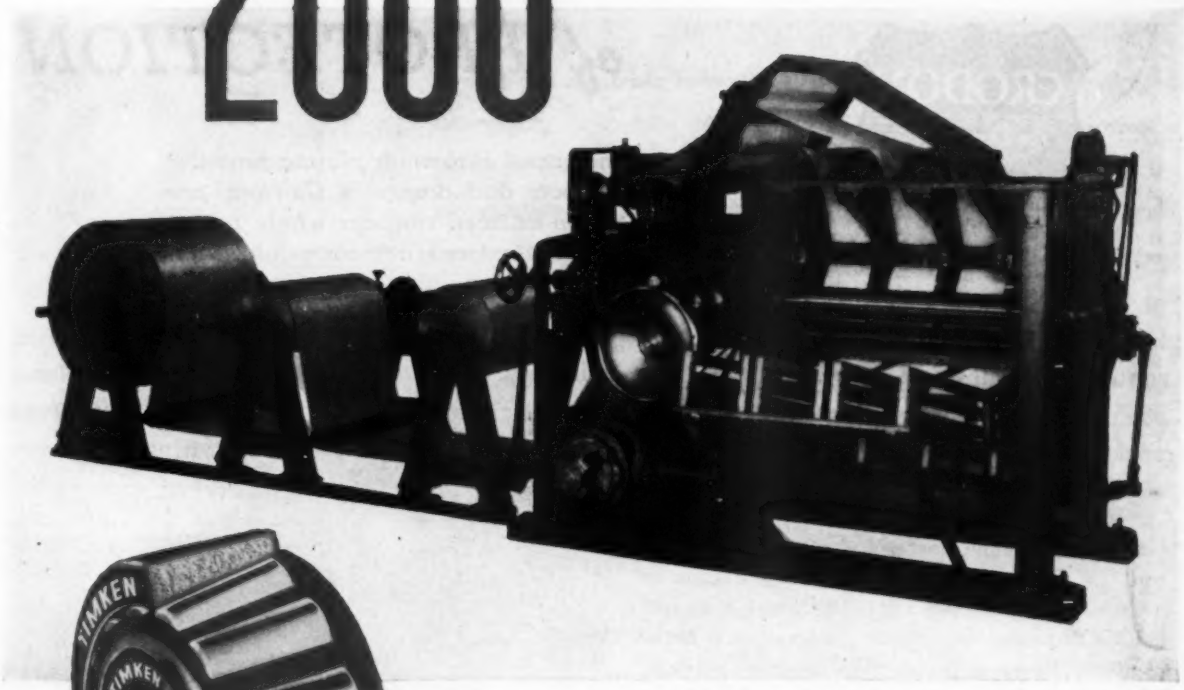
(2) Rotary Knife Cutters — engineered for the reduction of asphalted papers, cooked flax, bark, etc.

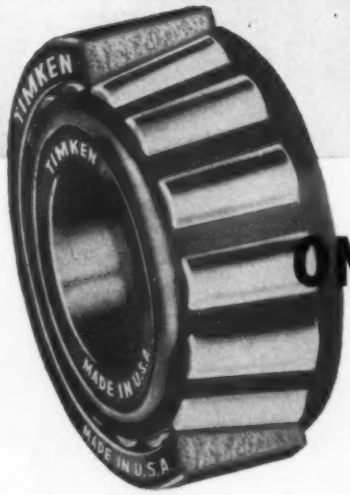
(3) Attrition Mills — outstanding for defiberizing rags and intimate blending.

SPROUT WALDRON
Manufacturing Engineers
MUNCY PENNSYLVANIA

64

FOLDS 2000 NAPKINS PER MINUTE





ON TIMKEN® BEARINGS

The Super-Six napkin folding machine made by Paper Converting Machine Company, Green Bay, Wisconsin, is a three web machine with a production of 2,000 embossed, quarter-folded napkins per minute.

Helping to make this high speed operation possible and at the same time to give the machine maximum accuracy, strength and endurance are 20 Timken tapered roller bearings on the embossing rolls, cut-off rolls and carrier rolls.

Because Timken bearings eliminate friction and wear; carry radial, thrust and combined loads; and hold moving parts in constant alignment, they are the most satisfactory bearings for any kind of equipment. Furthermore, they not only assure better machines, but also *better selling* machines — for their advantages are known and sought after the world over. Make sure the machines you make or buy are Timken bearing equipped. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address "TIMROSCO".

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◫ AND THRUST →◫← LOADS OR ANY COMBINATION →✳←

Industry's Modern Shield of PROTECTION

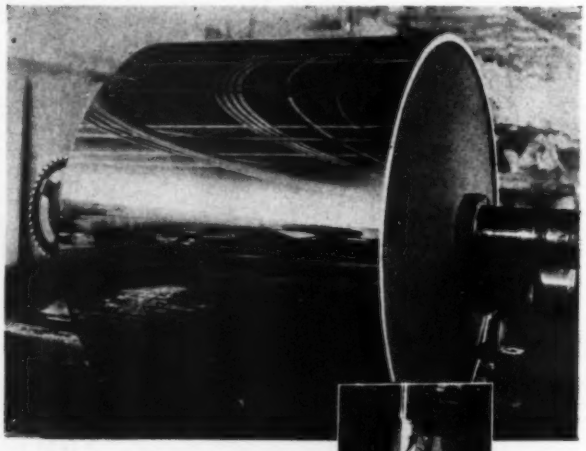
CRODON
The Chrome Plate

Industrial chromium plating provides, protects and preserves flawless, precision-finished surfaces where protection against wear and corrosion is vital.

Long after ordinary equipment has been discarded, chromium-plated parts continue in regular operation. Protection against wear and corrosion does more than simply prolong useful life . . . it maintains new-equipment efficiency for extended periods. This unusual performance assures drastically reduced costs, coupled with increased operating efficiency and improved quality of product.

Chromium is the hardest commercial metal. Industrial CRODON-plating greatly prolongs equipment life and provides substantial operating economies. CRODON-plated equipment guarantees a better product. New-equipment performance is maintained for extended periods. Freedom from product contamination and attainment of more perfect finishes are substantial advantages. The normal life of parts is prolonged by chromium plating. Equipment replacement is less frequent. Maintenance expense and operating delays are reduced. The consistently satisfactory performance of CRODON-plated equipment also provides many other economies.

The trade-mark CRODON assures the best in chromium plating. CRODON is the dependable guarantee of the most practicable and economical service available. Behind every CRODON application are the resources, experience and reputation of America's oldest and largest industrial chromium plating organization.



Surface protection, long wear and a better finished product result from this high-lustre CRODON-plated 6-ton steel drum, 6' diameter x 5' face.

Chromium plating of small tools and parts is practical, inexpensive and provides many operating benefits.

Write for further information.

CRODON PLATING *pays*

Chromium Corporation of America

Executive Offices—120 Broadway, New York 5

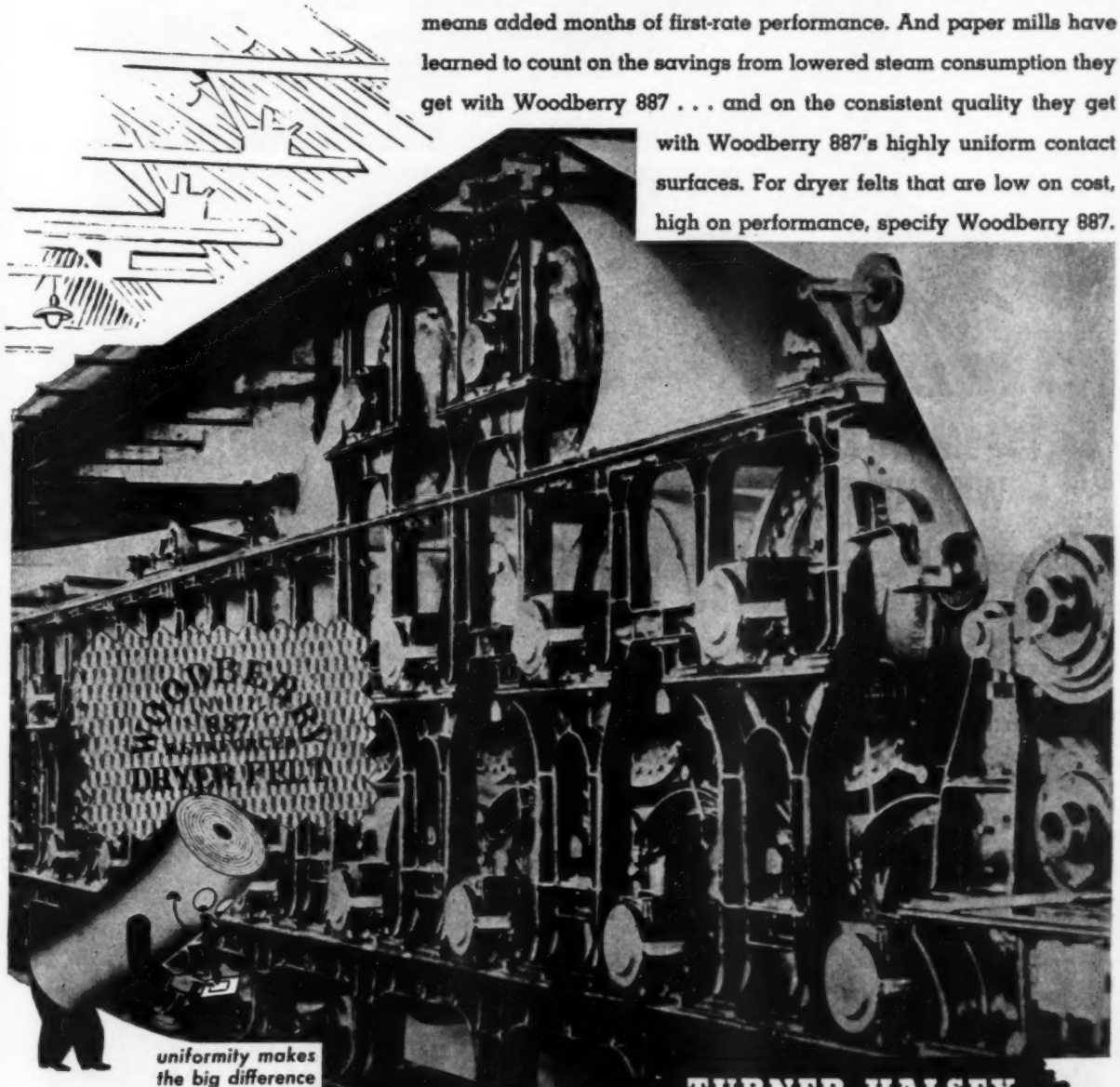
346 Huntingdon Ave.
Waterbury 90, Conn.

1760 Lakeview Road
Cleveland 12, Ohio

4645 West Chicago Ave.
Chicago 51, Ill.

Reinforced for Lower Costs Woodberry 887 Dryer Felts

You'll find smoother operation and longer wear in these reinforced heavy-duty dryer felts. Woodberry 887's patented feature—asbestos yarns woven at scientifically determined intervals into their face—means added months of first-rate performance. And paper mills have learned to count on the savings from lowered steam consumption they get with Woodberry 887 . . . and on the consistent quality they get with Woodberry 887's highly uniform contact surfaces. For dryer felts that are low on cost, high on performance, specify Woodberry 887.



uniformity makes the big difference

Mt. Vernon-Woodberry Mills

TURNER HALSEY
COMPANY
Selling Agents
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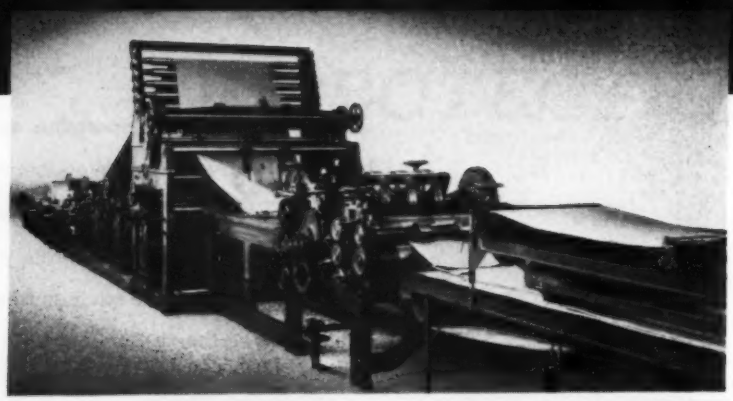
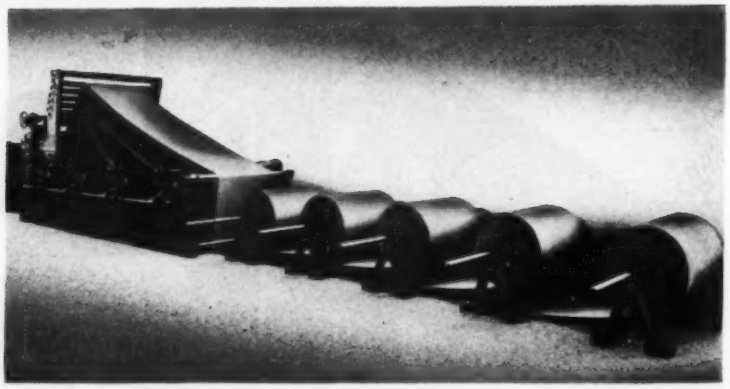
HOW TO INCREASE FLAT BAG PRODUCTION





New

SMITH & WINCHESTER

Multi-wall FLAT BAG TUBER

with Special Cross Pasting Units and Compensating Drive

Smith & Winchester specializes in custom-made Tubers and Bottomers for increased production of single and multi-wall, pasted and sewed, valve type bags for flour, cement, fertilizer and many other products.

The Flat Bag Tuber illustrated is equipped with the latest cross pasting units and new compensating drive for making 5-wall, pasted bottom bags. S & W Tubers and Bottomers are designed for maximum production and a minimum of spoilage.

S & W makes Tubers, Bottomers, Undercut Trimmers, Spot Cutters, Automatic Control Devices, Jordans, Fourdriniers, Shower Pipes, Pumps.
Write for bulletins.

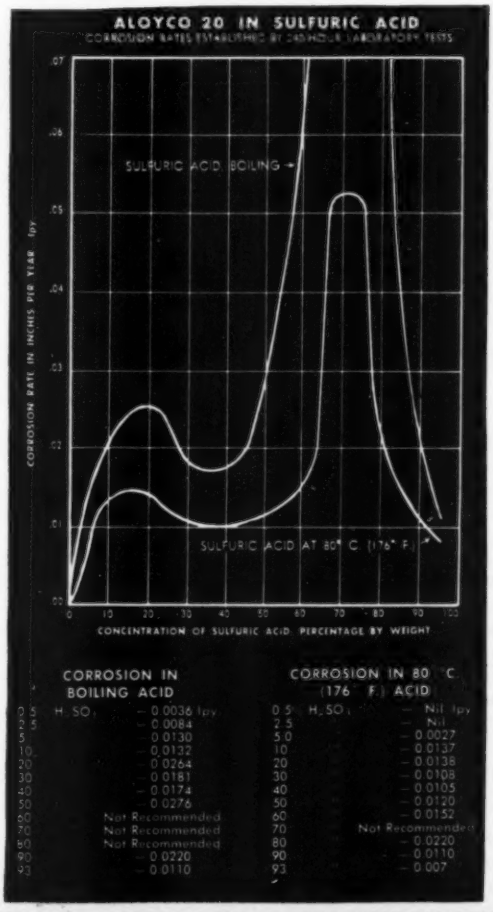
The SMITH & WINCHESTER MFG. CO.
South Windham, Connecticut

Serving the Paper Industry Since 1828

ALOYCO 20 VALVES
FOR SULFURIC ACID PIPE LINES

ALOYCO 20 is one corrosion-resistant alloy that really stands up to sulfuric acid under most operating conditions. At room temperatures, Aloyco 20 is practically unaffected in any concentration of H_2SO_4. It is also satisfactorily resistant at the boiling point up to 45% acid strength. In concentrations between 45% and 93%, temperature is an influencing factor. Our metallurgical service is well qualified to recommend regarding proposed applications in this range.

Aloyco 20 also has strong resistance to the effects of high strength sodium hydroxide, hot acetic acid, acetic anhydride vapors and hot nitric-sulfuric solutions. This alloy has wide use among manufacturers of oil refinery products, fertilizers, plastics, rayon, soap, synthetic rubber, coal tar products, explosives and many others. Consult us on your requirements.



CORROSION IN BOILING ACID		CORROSION IN 80° C (176° F.) ACID	
0.5	H_2SO_4 — 0.0036 ipy	0.5	H_2SO_4 — Nil ipy
2.5	— 0.0084	2.5	— Nil
5	— 0.0130	5.0	— 0.0027
10	— 0.0132	10	— 0.0137
20	— 0.0264	20	— 0.0138
30	— 0.0181	30	— 0.0108
40	— 0.0174	40	— 0.0105
50	— 0.0276	50	— 0.0120
60	Not Recommended	60	— 0.0152
70	Not Recommended	70	Not Recommended
80	Not Recommended	80	— 0.0220
90	— 0.0220	90	— 0.0110
93	— 0.0110	93	— 0.007

• Aloyco Gate Valve No. 111. Has double disc wedge that provides drop-tight closure and long life under severe operating conditions. Available in Aloyco 20, 18-8S, 18-8SMo, the higher chrome-nickel series, Worthite, Hastelloy, Monel, and pure nickel.

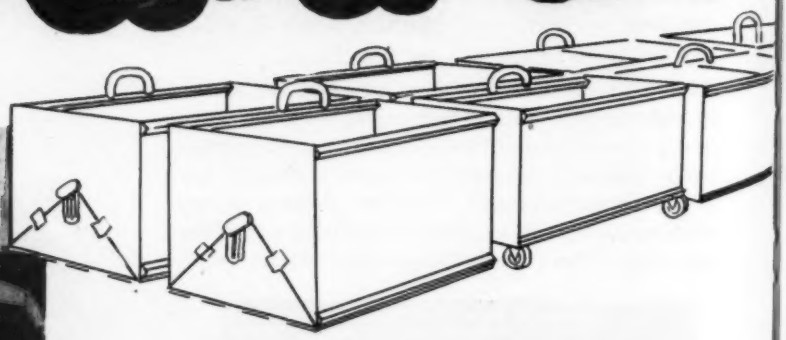
ALOYCO

STAINLESS STEEL VALVES AND FITTINGS

GATE, GLOBE, Y, CHECK, TANK, SAMPLING AND Y-PORT VALVES SCREWED AND FLANGED FITTINGS

ALLOY STEEL PRODUCTS COMPANY, INC.

THESE FOUR TRUCKS HANDLE 88 CONTAINERS OF 15 DIFFERENT TYPES



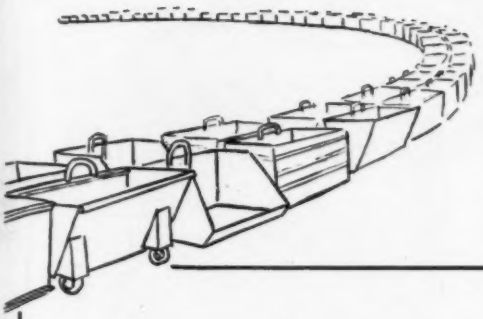
Like many industrial operations, this refinery extends over many acres and handles great quantities of materials, in addition to hundreds of cubic yards of scrap and rubbish daily. Choosing strategic points for receiving material, the 88 containers were placed throughout the refinery, the requirements at each point determining the size and number of containers to be used. At some points for liquid, water-tight containers with lids were required. At others, light, bulky waste called for a big capacity, light-weight enclosed container. Some accumulation points were inside buildings. Containers on casters that could easily be rolled indoors were provided. Each container is assigned to one of the four truck hoisting units and, on a synchronized schedule, is picked up as soon as it is filled. Photos at left show: top-truck hoisting unit backing up to a 6 cu. yd. Universal container. The driver attaches two chains, and then, from controls in the cab, the container is hydraulically lifted into carrying position (see photo at left center). Arriving at the disposal area, the container is automatically dumped (see photo left below). The container is then returned to its original point for reloading and the truck hoisting unit moves on to the next container on its route. Pick-up and dumping operations require only a matter of seconds, thus it is possible for one man and one truck to handle any number of containers, keeping a steady flow of material moving without waiting or wasting time.

On opposite page are illustrated the types of containers in the original installation and the materials they handle. Note how easily the basic Dempster-Dumpster containers are converted for special purposes by the simple addition of lids, casters or some other special change.

The Dempster-Dumpster system is saving money in large and small plants alike. Its great flexibility makes it adaptable to any plant, regardless of size, and assures tremendous savings along with amazing improvements in efficiency. A survey of your plant, without charge or obligation, could reveal the amazing effectiveness of the Dempster-Dumpster System.

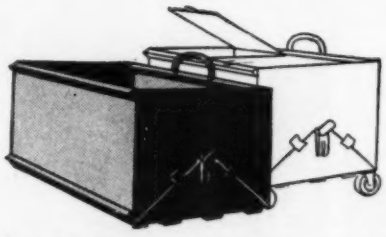
DEMPSTER BROTHERS, Inc.

. . . THIS IS THE DEMPSTER-DUMPSTER SYSTEM
. . . SAVES THIS REFINERY $58,000 ANNUALLY

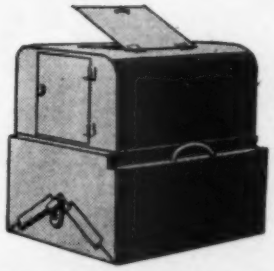


The Dempster-Dumpster System of Materials Handling, simply stated, permits the use of any required number of detachable containers, of various designs and capacities, to be serviced by a single truck. Its ability to effect tremendous savings in handling numerous types of materials has been definitely established in hundreds of leading industrial plants.

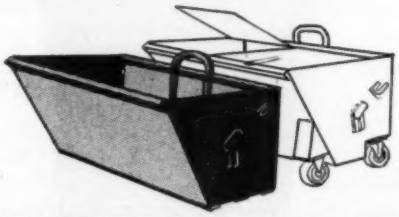
In this particular case, in a large refinery, four of the twelve trucks formerly detailed for materials handling, including scrap and rubbish collection, were equipped with Dempster-Dumpster Hoisting units to handle 88 detachable containers of 15 different types. The Dempster-Dumpster System of quick pick-up and dumping of pre-loaded containers has worked wonders in efficiency, plant appearance, and savings. In one year savings of over $58,000 was shown by our engineers survey. Time has proved the correctness of this survey. Since the original order of 88 containers, so many more uses for the equipment and greater savings were discovered that 55 additional containers have been placed in service with a grand total of 143 containers now being handled by the four trucks.



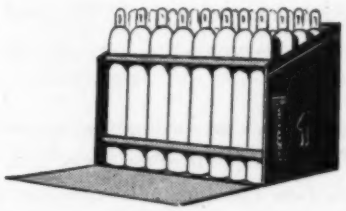
DROP BOTTOM CONTAINERS. 48 drop-bottom containers were furnished for handling trash and rubbish, steel turnings, scrap metal, tube ends and clay:—Twenty 6 cu. yd. open top type, one 6 cu. yd. with lids, nine 2½ cu. yd. open top type, two 2½ cu. yd. open top with casters, six 3 cu. yd. open top, nine 4 cu. yd. with lids, one 4 cu. yd. enclosed with hinged door in top.



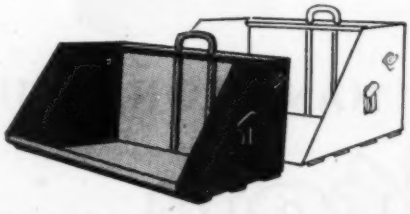
UNIVERSAL CONTAINERS. 13 universal containers were furnished for handling trash and rubbish. Universal containers feature completely enclosed construction, drop-bottom dumping, a door in either end for ground-level loading and a lid in the top for loading from a platform.



TILT TYPE CONTAINERS. 16 tilt type containers were furnished for handling general refuse, sludge and settlings:—Four 3 cu. yd. open top type, nine 3 cu. yd. with lids, three 3 cu. yd. with lids and casters.



SPECIAL CONTAINERS. 3 special containers were furnished for handling and transporting oxygen cylinders from one point to another in the refinery. This container is typical of the many highly specialized uses for which Dempster-Dumpster containers are constructed. Many other containers are available for handling almost any type of material known, be they liquid, dust, light or bulky or very heavy materials.



SKIP TYPE CONTAINERS. 7 skip type containers were furnished for handling refuse wax, oil, lube and coal:—Three 3 cu. yd. skip type with lid, three 3 cu. yd. skip type without lid, one 3 cu. yd. skip type with teeth.

DEMPSTER DUMPSTER
TRADE MARK REG.
SYSTEM

7118 Dempster Bldg., Knoxville 17, Tennessee

"Go Slow... AND THEY MAY TAKE YOU HOME"

There is no economy in driving a set of tires until the fabric shows through the casing. And none in using a felt until the mesh shows through the nap. In both instances you have to "go slow"—and slow speed means high cost.

When you have to reduce machine speed of any paper or board machine it is time to change felts. Install Hamilton Felts and watch how much faster your sheet travels over the drier rolls—how much more production you get—how little broke.

Go fast! There's a lot of mileage in Hamilton Felts.

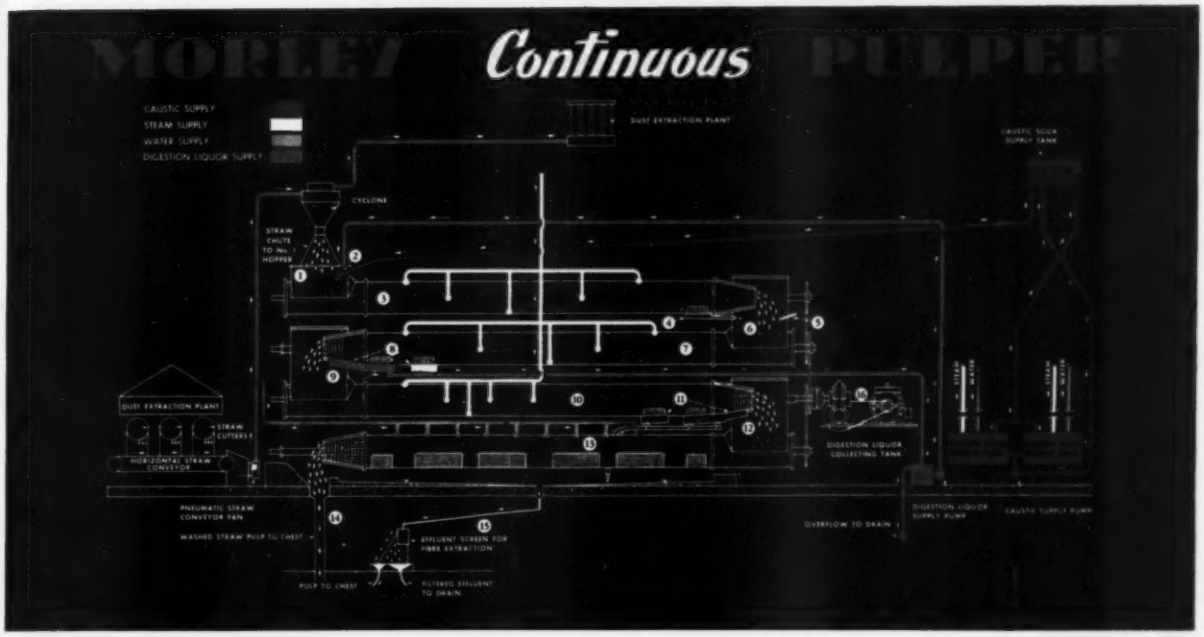
SHULER & BENNINGHOFEN, HAMILTON, OHIO

• Miami Woolen Mills •

Hamilton Felts

• Established 1858 •

MORLEY Continuous PULPER



PATENTED AND PATENTS APPLIED FOR

for continuous pulping of Cereal Straws, Bagasse, and the like

The MORLEY CONTINUOUS PROCESS AND APPARATUS, now in mill operation for five years, is a proven efficient method, operating at atmospheric pressure only. It economically and continuously processes cereal straws and other cellulosic materials to pulp for the ultimate manufacture of quality Paper and / or board, for example: .009 Corrugated, Tube Stock, Wall Board, and many grades requiring igid characteristics.

- Continuous Feed and Digestion at high density.
- Operates at atmospheric pressure and low temperature.
- For .009 corrugating and board grades, average yields 69-70% based on straw, as used, averaging 12% moisture.
- Low steam consumption.
- Low overall power consumption.
- Digestion period is approximately 20 minutes for .009 corrugating or board grades. This insures minimum degradation of finer fibres, and reduces shrinkage.
- Space required for one 50-ton Unit is 7,000 cubic feet, a saving of approximately 65% over conventional equipment.

Write for Morley Brochure

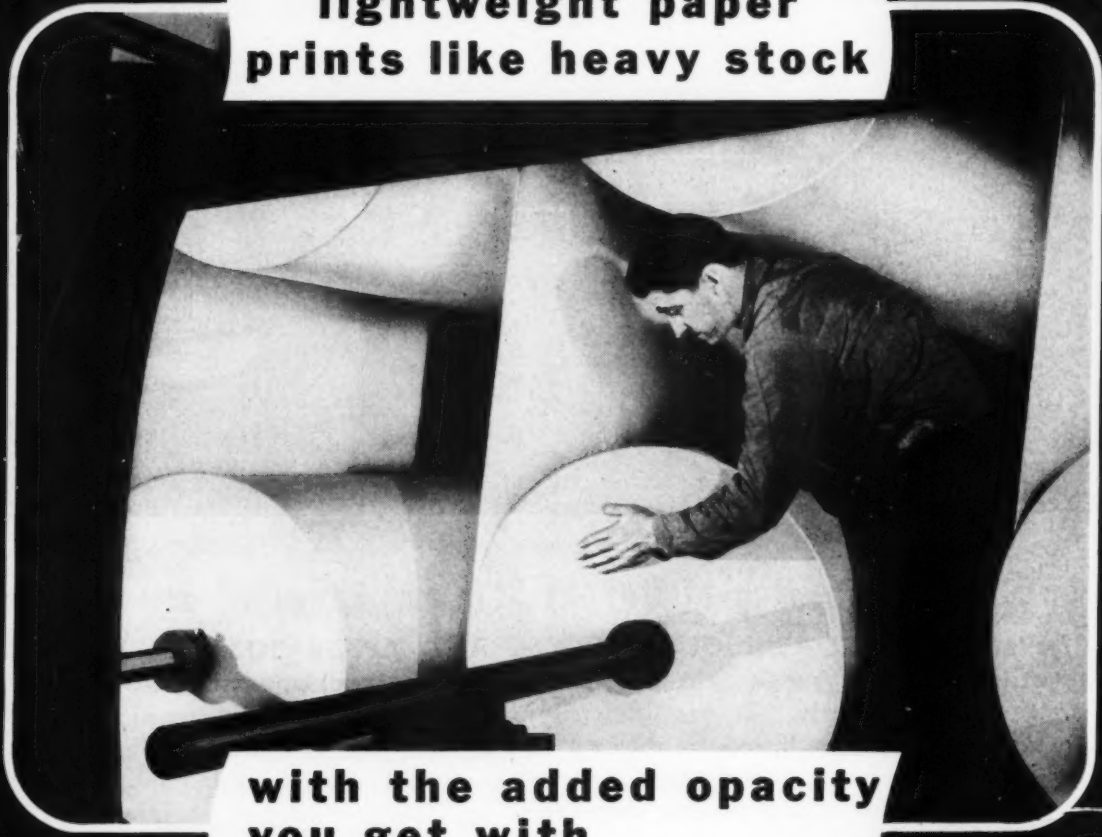
KEY TO FLOW DIAGRAM:

1 No. 1 Tube Hopper
2 Caustic Soda Orifice metering system
3 No. 1 Tube Impregnator
4 Screen Plate and Drainage Line for Digestion Liquor to No. 2 Tube
5 Recording Thermometer
6 No. 2 Tube Hopper
7 No. 2 Tube Digester
8 Screen Plates and Drainage Line for Digestion Liquor to Collecting Tank
9 No. 3 Tube Hopper
10 No. 3 Tube Digester
11 Screen Plates and Drainage Line for Spent Liquor to Drain
12 No. 4 Tube Hopper
13 No. 4 Tube Washer
14 Washed Straw Pulp to Chest
15 Spent Liquor Supply to Effluent Screen
16 Motor, Texrope, and Reduction Gear Drives

PAPER and INDUSTRIAL APPLIANCES, INC.
122 EAST 42nd STREET NEW YORK, N. Y.

TITANOX . . . *the brightest name in titanium pigments*

lightweight paper prints like heavy stock



with the added opacity you get with TITANOX pigments

Paper makers everywhere find that TITANOX pigments add great opacity to their products. Even lightweight stocks take on an opacity usually found only in heavier paper . . . an important advantage that eliminates troublesome "show-through" in printing. There is a specific TITANOX pigment to meet the particular requirements of any paper — at the same time imparting the high whiteness and brightness for which these titanium dioxide pigments are famous.

Our Technical Service Laboratories are available to help you solve any pigmentation problems. We invite your inquiries.

TITANOX

Reg. U. S. Pat. Off.

TITANIUM PIGMENT CORPORATION
SOLE SALES AGENT

111 Broadway, New York 6, N. Y.
104 So. Michigan Ave., Chicago 3, Ill.
350 Townsend St., San Francisco 7, Cal.
2600 S. Eastern Ave., Los Angeles 22, Cal.

6455

Here's How Industry Uses Chemalloy To Resist Corrosion

Where corrosion is attacking your operating equipment, it's a job where you should consider Chemalloy castings. Chemalloy is the alloy specifically developed to resist the corrosive action of fluids and gases under high temperatures.

Illustrated here are typical examples of the work Chemalloy is now doing. For more complete information, write direct to Electro-Alloys Division, Elyria, Ohio

Pharmaceutical

Chemalloy filter drum used in processing penicillin where stainless metal is a must in maintaining purity. (18-8 Stainless)

Soap

Chemalloy valve body. This is one of the first castings to be produced for this user and indicates the experimental work now being conducted for Chemalloy users. (Ni-Resist Type 2)

Power

6500 lb. Chemalloy Turbine Runner used in water to resist oxidizing mineral and organic acids that corrode ordinary metals. (19-9 Stainless)

Food

Chemalloy screw casting used in pineapple processing plant to resist corrosive action of fruit juices. (19-9-Mo Stainless)

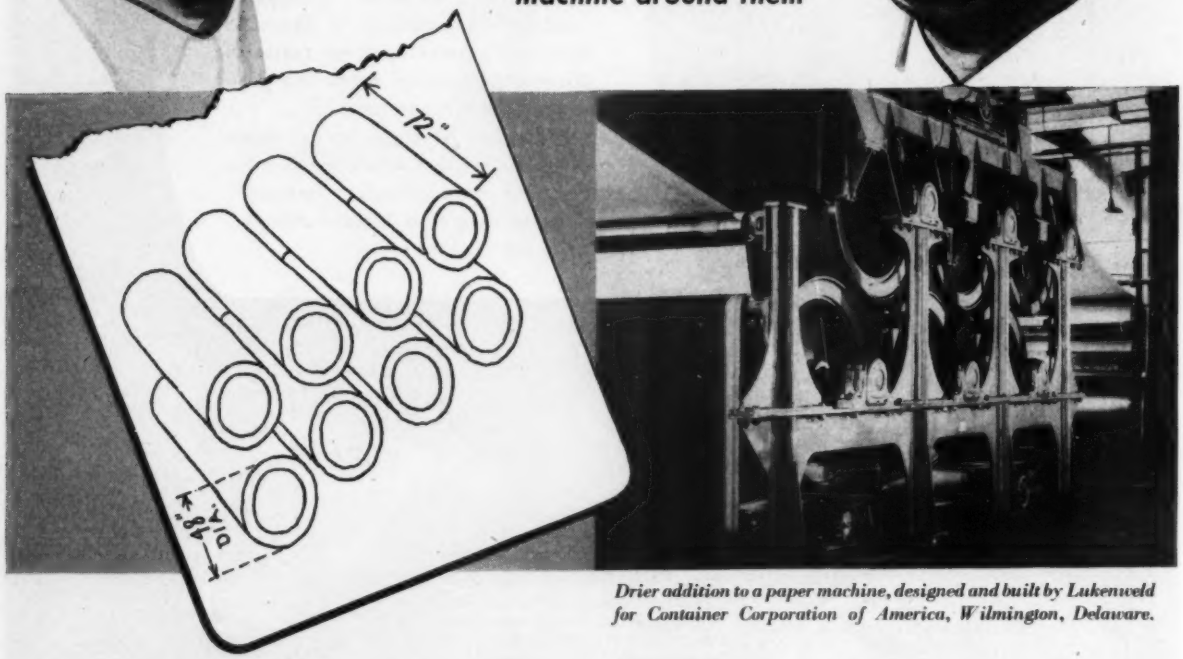
AMERICAN **Brake Shoe** COMPANY

ELECTRO-ALLOYS DIVISION

ELYRIA, OHIO

"EIGHT cast-iron, single-shell drier rolls are needed..."

"SIX jacketed drier rolls will do it, and Lukenweld will build the machine around them"



Drier addition to a paper machine, designed and built by Lukenweld for Container Corporation of America, Wilmington, Delaware.

● To increase the output from one of Container Corporation's paper machines, it was estimated that eight cast-iron, single-shell rolls would be needed to provide the additional drying capacity. Space was limited, so that was a factor.

Lukenweld determined that *six* Lukenweld Jacketed Drier Rolls would accomplish the same results as the eight cast-iron rolls. This would require less space, simplify the supporting structure and reduce costs. Lukenweld designed and built the machine to house and drive the rolls accordingly.

That machine is shown in this photograph at work in their plant—a compact unit packing a lot of production into small space. It is of welded plate construction, providing high strength and increased rigidity with minimum weight.

We at Lukenweld like to take ideas developed by your engineers and operating men and make them materialize. As designers and manufacturers of complete drying machinery, we are well acquainted with drying work in many industries.

May we talk with you about your drying or production design requirements? Write Lukenweld, Division of Lukens Steel Co., 408 Lukens Bldg., Coatesville, Pa.

LUKENS
LUKENWELD DIVISION

DESIGNERS, ENGINEERS AND MANUFACTURERS OF MACHINERY

• • SPEED SCRAP TO THE MILLS TO MAKE MORE STEEL • •

EASIER and QUICKER OPENING and CLOSING

Another reason why

OIC

SETS THE PACE IN VALVES

Quick and easy operation means less wear. Less wear means less maintenance! ● Take a look at the heavy I-beam wedge. Precision machined slots along each side of the wedge fit closely to the sturdy guide ribs that are integrated with the valve body, reducing vibration, assuring perfect seating. ● The rugged T-slot on top of the wedge permits a fine adjustment of the wedge to the seats, provides a positive, leakproof closure. ● The carefully machined flange, the extra body-wall thickness, the heavier construction throughout the entire design give OIC Valves the extra stamina to withstand fluctuating pressures and tough service. ● Features like these make OIC Valves operate so smooth and easy, last longer, save time, save *money!* Features like these are why OIC *Sets the Pace in Valves!*

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WE'LL BE GLAD TO SEE YOU AT BOOTH 58 AT 18TH NATIONAL POWER EXPOSITION

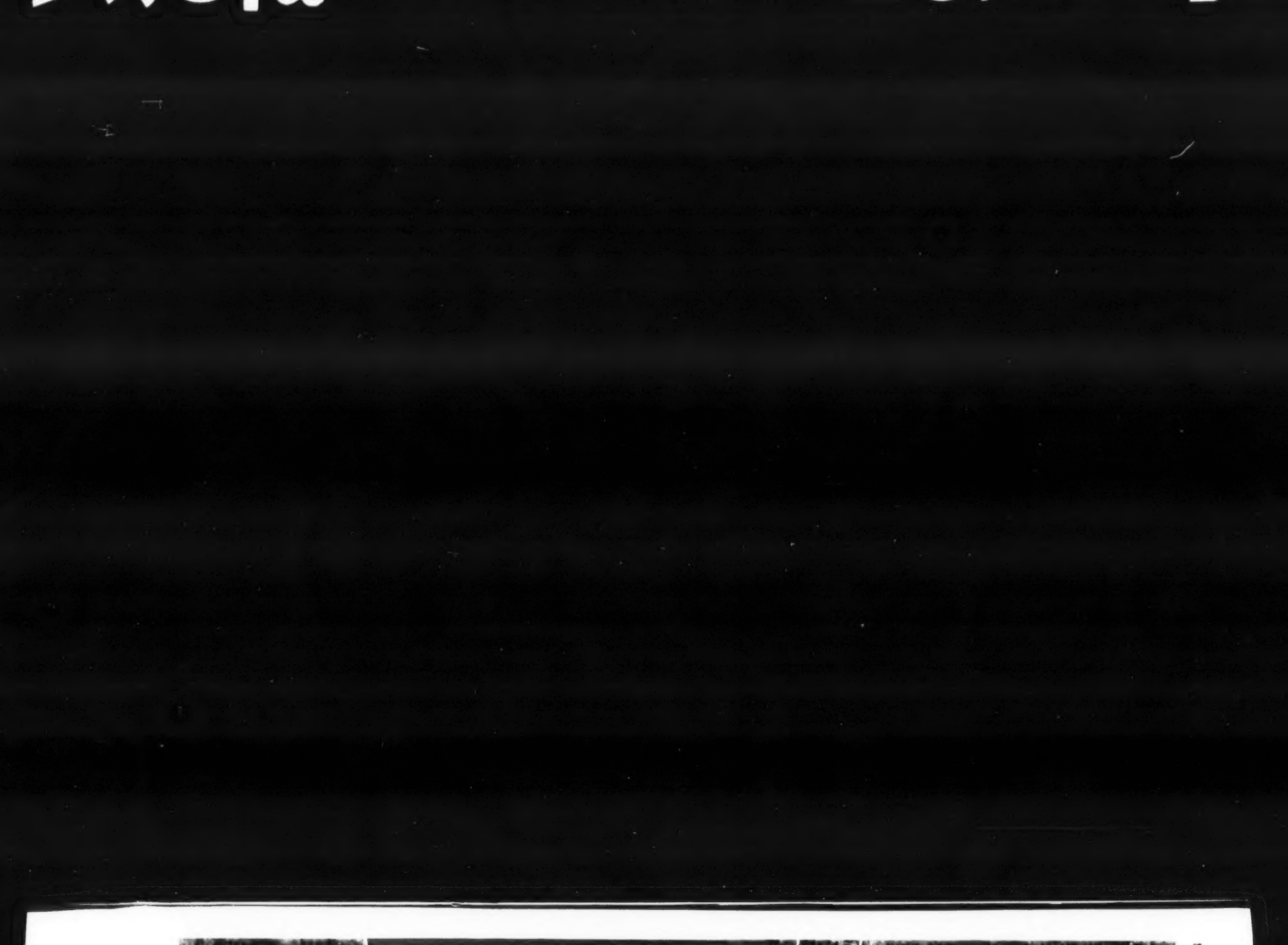
Make our booth your headquarters at the show. Get your complimentary copy of our new 235-page catalog.

THE OHIO INJECTOR COMPANY • WADSWORTH, OHIO

OIC VALVES

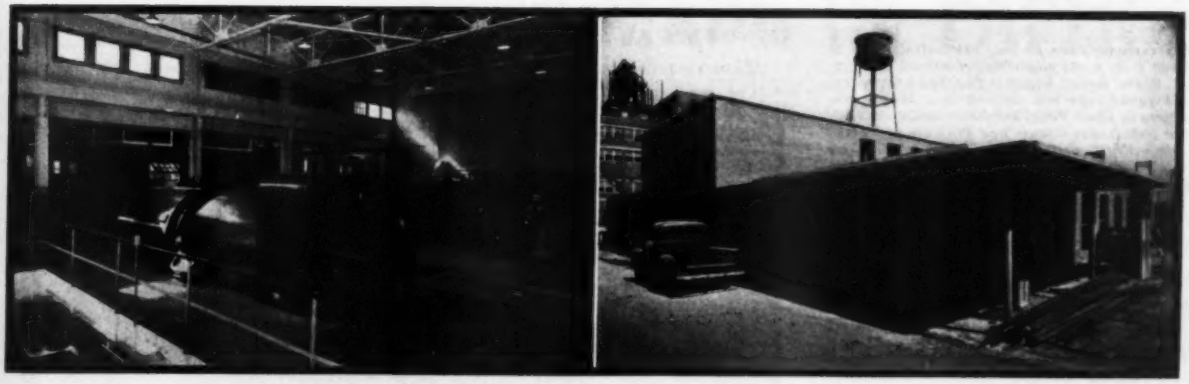
STEEL · IRON · BRONZE

Good
Housekeeping
in the Wood Yard

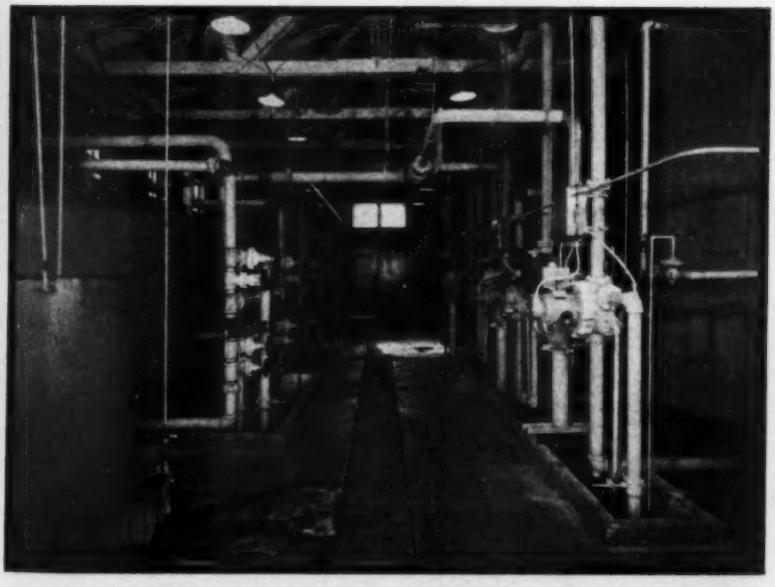


TRADE WINDS

Major Increase in Production Will Result from Crossett Expansion



Expansion at Crossett . . . Left—Interior view of recently completed turbine room showing new 600 kw turbine . . . Right—Personnel facilities building which will be completed by end of this year



Recently completed addition to Crossett water treating plant to meet needs of increased production

▶▶▶ PAPER DEMAND and an increase of raw materials have brought about the expansion program now under way at Crossett Paper Mills, Crossett, Arkansas. These plans which will boost the daily output of the Crossett mill by 140 tons are being carried out in accordance with the company's policy to keep production in balance with raw material supply. The recent announcement of specific increase in output followed an analysis of available pulpwood.

Present plans call for the installation of a new 210-inch fourdrinier to be completed early in 1950. This new unit will be used exclusively for the manufacture of lightweight kraft paper of grades varying from 20 to 40 pounds. The fourdrinier machine now in use at Crossett then will produce only heavier grades of paper.

Prior to installation and operation of the new high speed machine, a large amount of preliminary building must

Dressed in Paper

The costume worn by this attractive model is made from kraft paper manufactured at Crossett Paper Mills. Representing home industry, this young lady was entered in a beauticians parade in Little Rock, Arkansas, on October 10. The hat, jacket, blouse and skirt are of Leatherneck Kraft, and the handbag is of Leatherneck Kraft cylinder machine board. The Public Relations Department of Crossett Paper Mills assisted in styling this costume.

be completed. This year has seen work come off the drawing table onto the ground. Speedy planning and construction already have resulted in the completion of the digester building. Three new digesters housed in this building are ready for operation.

A new 100,000-lb. Babcock and Wilcox boiler has been installed and is now in operation. A completely new turbine room also has been erected to house a 6000-kw turbine already acquired.

In order to meet the needs of increased paper mill production, there has been a major addition to the water treating plant.

A modern facilities building for paper mill personnel will be completed before the end of this year. At the same time, work will be commenced for the new machine room.

A new research laboratory included in the plans will complete Crossett's gigantic expansion program—adding more production to an expanding industry.

FINANCIAL

As the securities markets bounded back in the fortnight before election from the sell-off a month ago, paper mill stocks went up with the tide and were generally at near the high prices of the year.

Certain-teed Products Corp. — Net income for nine months ended Sept. 30 was $4,843,039 as compared with $4,450,957 a year ago.

American Box Board Co.—Net income for nine months ended Aug. 31 was $1,199,721 as against $1,116,684 in 1947.

Container Corp. — Net income for nine months ended Sept. 30 was $7,577,721 as compared with $8,002,641 in 1947.

MacAndrews & Forbes—Net income for nine months ended Sept. 30 was $842,147 as against $888,070 in 1947.

Masonite Corp.—Net income for the fiscal year ended Aug. 31 was $7,027,335 as compared with $4,381,142 the previous year.

Minnesota & Ontario Paper Co.—Net income for nine months ended Sept. 30 was $4,542,684 as compared with $4,117,778 for the same months of 1947.

Sutherland Paper Co.—Net income for nine months ended Sept. 30 was $1,602,290 as compared with $1,754,610 a year ago.

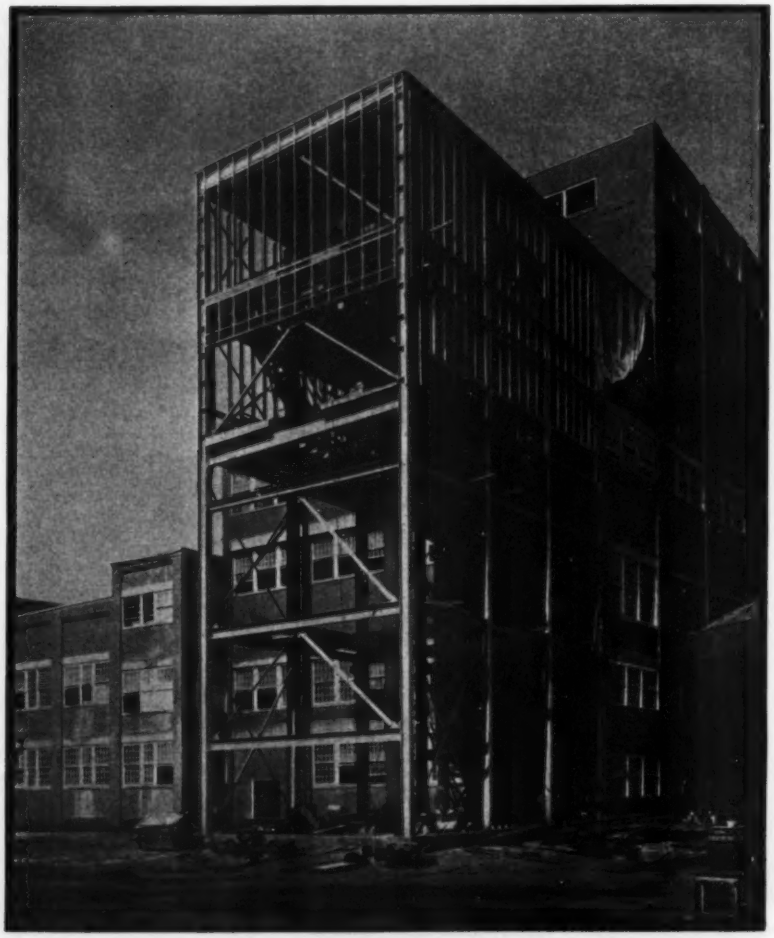
St. Regis Paper Co.—Net income for nine months ended Sept. 30 was $12,048,192 as compared with $11,055,144 for the same months of 1947.

Riegel Paper Co.—Net income for twenty-eight weeks ended July 18 was $498,680 as compared with $634,607 for the comparable period in 1947.

United Board & Carton Co.—Net income for twelve weeks ended Aug. 21 was $78,322 as compared with $452,528 for the same period in 1947.

National Container Corp.—Net income for six months ended June 30 was $3,384,112 as compared with $5,997,384 for the same period in 1947.

West Virginia Pulp & Paper Co.—Net profit for nine months ended July 31 was $8,001,819 as compared with



Right—Extension at Crossett Paper Mills which will house three new digesters

PAPER · · · America's 6th Industry

WHITE BLACKBOARDS MADE OF PAPER

(NEWS ITEM: *The lastest development for school rooms is "white" blackboards made of plastic-coated fiber board.*)

Gone forever are the days of the little red schoolhouse. And in its place are such revolutionary changes as "snowy white blackboards", made of plastic-coated fiber board. The coating is sprayed and baked on the lightweight fiber base providing a smooth, bright surface resistant to sunlight, water and cleaners. A special crayon eliminates chalk dust and is easily erased with a dry cloth. We will gladly supply manufacturer's name on request.

DDT treated wallpaper for nurseries . . . paper bags for "hybrid" corn . . . paper filler for airport runways . . . new uses for paper calling for new standards of lightness and toughness, new standards of quality in performance. New responsibilities—new opportunities for the Pulp and Paper Industry.

The Puseyjones Organization is now devoting itself completely to the design and construction of Paper-Making Machinery built to new high standards of speed and efficiency, and to the modernization of existing machines. Additional capacity in Metals Fabrication is now available through conversion of facilities formerly devoted to the building of ships.

Puseyjones Engineers will welcome the opportunity to work with you in solving production problems.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Wilmington 99, Delaware, U. S. A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

$7,878,734 for the same period in the previous fiscal year.

Great Northern Paper Co. — Net profit for the first six months of the year was $2,165,012.

Gaylord Container Corp.—Net earnings for the first six months of 1948 were $4,228,498 as compared with $4,751,017 for the same period a year ago.

Kimberly-Clark Corp. — Net profit for the first six months of 1948 was $4,087,916 as compared with $3,744,966 a year ago.

Paper Mill Corporate Changes

In order to assure itself an adequate supply of paper, the New York Daily News has agreed to purchase 2,500 shares of the common stock of the St. Croix Paper Company, subject to the paper company's stockholders' approval. The sale would provide about $500,000 for the St. Croix contemplated expansion program, which involves about $1,600,000 in improvements over the next five years.

An offering of 49,864 shares of Crown-Zellerbach Corp. common stock has been made through New York bankers, priced at 29½.

New York Stock Exchange—Stocks

	Closing Prices Oct. 25	Sept. 27
A.P.W. Products	*4⅝-5	5⅜
Celotex	28	26
Same Preferred	*19-19¼	18½
Certain-teed Products	16⅜	14
Champion P & F Co.	25½	22
Same Preferred	*96-98	*97-99
Chesapeake Corp.	29	*28⅝-29½
Container Corp.	39½	34½
Same Preferred	*90-91½	92
Continental Diamond	10¼	10
Crown Zellerbach	29½	27⅛
Same Preferred	96½	97
Same $4 Preferred	*100-103	100
Dixie Vortex	31	28½
Same "A"	47½	52½
Robert Gair	7¼	6⅞
Same Preferred	17¼	*17½-18
International Paper	58⅝	55½
Same Preferred	*96½-98⅝	*94½-96½
Kimberly-Clark	19⅞	20⅛
Same Preferred	*92-94	96½
McAndrews & Forbes	*36¾-37⅛	37½
Marathon	24⅝	21⅞
Masonite	61¾	55¼
Mead Corp.	19¼	18⅛
Same Preferred	*85½-87½	91½
Same 2nd Preferred	*37-38⅜	*36-38½
National Container	11⅞	9⅜
Paraffine Cos.	23¾	21½
Same Preferred	*100½-102	*102-104
Rayonier	33½	30
Same Preferred	33	*32-32½
Scott Paper	50¼	44½
Same Preferred	88½	*87¾-89½
St. Regis	11	10⅛
Same Preferred	*87-87½	87⅞
Sutherland Paper	42½	40
Union Bag & Paper	32⅜	30½
United Board & Carton	*16¼-16½	10
United Wall Paper	4½	3⅜
Same Preferred	*26⅝-28½	*23½-24¾
U.S. Gypsum	106¼	96
Same Preferred	169	*167-171
West Va. P & P Co.	33⅜	46½
Same Preferred	*103¼-105½	*103½-105¾

New York Stock Exchange—Bonds

Celotex 3½%	.....	.....
Champ. P&F Co. 3%	.....	.....
Certain-teed 31%	.....	.....

New York Curb Exchange—Stocks

AM Writing	.....	5¾
Great Northern	39	38⅞
Taggart	11½	.....

*Closing Bid and Asked Prices.

Washington News

FTC FILES COMPLAINT AGAINST NUMBER OF PAPER DISTRIBUTORS

The Federal Trade Commission has filed a complaint against the nation's principal paper distributors alleging that they unlawfully combined to fix prices and eliminate competition in the sale of fine and wrapping papers. The complaint names the National Paper Trade Association, twenty-three regional associations and nearly 100 individual distributors. The complaint alleges that the defendants issued booklets setting out in "minute detail" a pricing formula for quoting prices and that when there were deviations from fixed prices the alleged violator was visited by representatives of the associations with the result that fixed prices were adhered to in future transactions.

The Commission issued at the same time a list of proposed trade practice rules which will be considered at a hearing in Washington, November 16. Proceedings to establish such rules principally covering such practices as misrepresentation price cutting to sell at less than cost, were instituted by application for the industry. Ralph G. Luff, Philadelphia merchant, president of the National Paper Trade Association emphatically denied the charges which he says will seem fantastic to the trade. The policing of such an industry with at least a thousand dealers not members of the trade associations, he said, would be an utter impossibility. The defendants are given twenty days in which to answer the complaint.

▶▶▶ THE ACTIVITIES OF the Forest Products Division of the National Security Resources Board will be supervised by John D. Mylrea, treasurer and director of the Mosinee Paper Mills, Mosinee, Wisconsin. The new appointee will organize his division at once.

CAPEHART COMMITTEE WILL CONSIDER ZONE PRICE COURT DECISION

The so-called Capehart Committee will begin hearings in November on the effect of the court decision in the cement case on other American industries. The case involves the Government's position that prices of cement and other products may not be fixed on a zone basis, but in effect on an fob mill basis.

It has been claimed by industry that this will force a widespread redistribution of manufacturing plants to bring mills into the territory of their consumers. The paper industry will present its view of the problem through George Olmsted, Jr., president of the S. D. Warren Company. Mr. Olmsted will not discuss the problem from the standpoint of an individual manufacturer, but on the basis of extensive studies made through different branches of the industry. Other paper manufacturers may be heard, possibly including D. K. Brown, of the Neenah Paper Company; Vice President Massingale, of Eastern Corporation; and the representatives of a market pulp mill. The National Paper Trade Association has also asked to be heard.

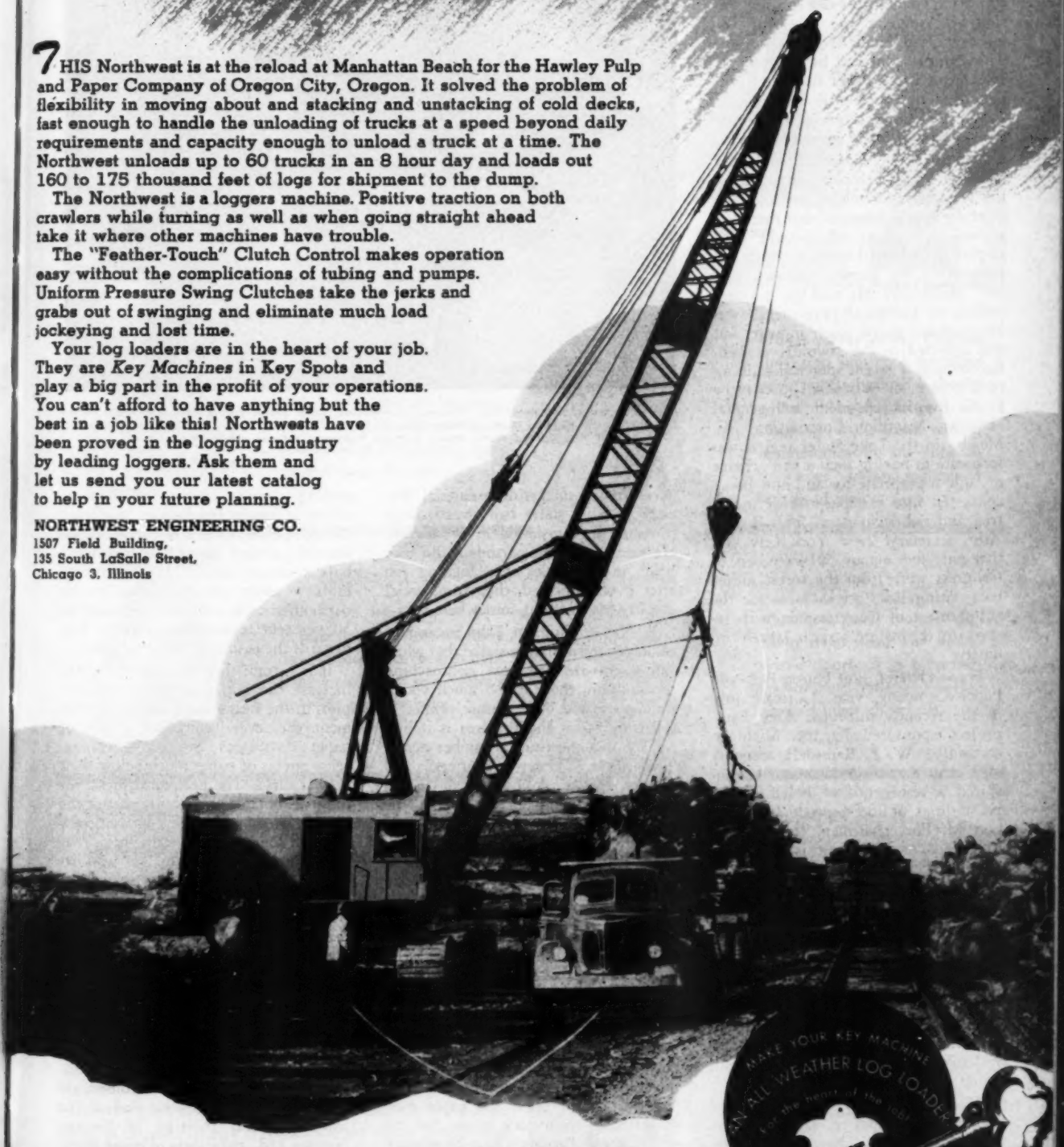
It has been said by leading industrialists that the principle involved in the cement case will cause a radical change in marketing methods in all industries. It is well known that newsprint prices are fixed on a zone basis, based theoretically on the differences in freight from the principal producing areas to the consuming regions. The United States decision may have little effect on this grade, however, as the zone prices are set in Canada, not by American mills.

▶▶▶ A LOWER COURT decision which disallowed a claim of $3,000,000 by St. Regis Paper Company against the Government has been upheld by the Supreme Court, which body refused to review the case. The Claim involved losses from government control of the company's Tacoma, Washington, pulp plant during the war.

▶▶▶ VIOLENT PROTESTS are being made against the action of the railroads in levying a charge of 6 cents per hundred pounds on the loading and unloading of import and export freight. At a hearing in New York, a representative of the pulp importers charged that this fee would mean an increase in the laid down cost of imported pulp of over $1,000,000 per year.

▶▶▶ A VICTORY WAS claimed by the Port of New York Authority officials, when the freighter Braheholm sailed into Newark with a cargo of wood pulp for distribution to users of high-grade paper. It represents the recapture of a type of cargo that the port of New York lost in former years to other ports, including Philadelphia and Baltimore. The authority rewon the shipment by altering existing sheds, rehabilitating rail trackage and installing suitable storage space and fast-working equipment for the baled goods. The shipment which originated in northern Sweden was 6,400 tons.

Smoothing out the KINKS in a fast moving show.



THIS Northwest is at the reload at Manhattan Beach for the Hawley Pulp and Paper Company of Oregon City, Oregon. It solved the problem of flexibility in moving about and stacking and unstacking of cold decks, fast enough to handle the unloading of trucks at a speed beyond daily requirements and capacity enough to unload a truck at a time. The Northwest unloads up to 60 trucks in an 8 hour day and loads out 160 to 175 thousand feet of logs for shipment to the dump.

The Northwest is a loggers machine. Positive traction on both crawlers while turning as well as when going straight ahead take it where other machines have trouble.

The "Feather-Touch" Clutch Control makes operation easy without the complications of tubing and pumps. Uniform Pressure Swing Clutches take the jerks and grabs out of swinging and eliminate much load jockeying and lost time.

Your log loaders are in the heart of your job. They are *Key Machines* in Key Spots and play a big part in the profit of your operations. You can't afford to have anything but the best in a job like this! Northwests have been proved in the logging industry by leading loggers. Ask them and let us send you our latest catalog to help in your future planning.

NORTHWEST ENGINEERING CO.
1507 Field Building,
135 South LaSalle Street,
Chicago 3, Illinois

MAKE YOUR KEY MACHINE AN ALL WEATHER LOG LOADER
For the Heart of the Job
PROFIT

NORTHWEST

LAKE STATES FOREST IND. INFORMATION COMMITTEES MEET IN JOINT SESSION

Forty members and guests of the three Lake States Forest Industries Information Committees met in joint session last month at the Trees for Tomorrow camp, Eagle River, Wisconsin. This camp, sponsored by a group of Wisconsin River paper mills is maintained as an educational and demonstrational facility catering to a wide cross section of forest interested groups.

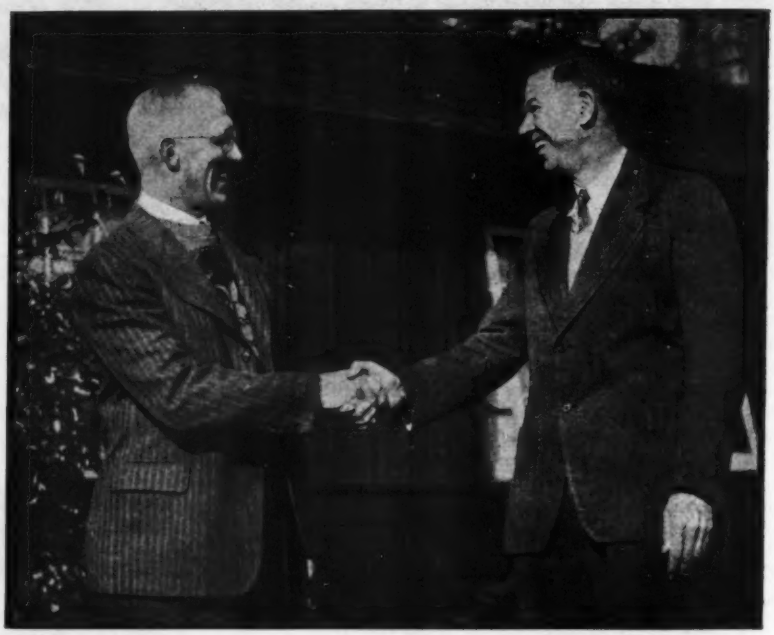
Stanton Mead, Consolidated Water Power & Paper Company, chairman of the Wisconsin committee, keynoted the meeting with a statement that there has arrived a maturity of thought with respect to industrial forestry which has superseded the former "cut-out, get-out" philosophy. He said the growing feeling of industrial permanence was not confined to the paper industry but was reflected in the sawmills as well. Referring to a recent speech describing twenty years of Wisconsin forestry by D. C. Everest, president and general manager, Marathon Corporation, Mr. Mead said the Lake States region was fortunate in having such a vast acreage of land appropriate for and now being converted into the purpose of industrial and public forestry. John B. McAfee, secretary, New York City said that only five out of 591 members of Congress were from the forest industries, citing this fact as logic for the enlightment of Congressmen with respect to the nation's sixth largest industry.

Francis Kiefer, Port Huron Pulp and Paper Company, vice chairman, told of the recently instituted Tree Farm project sponsored by the Michigan committee. W. F. Ramsdell, secretary said that current leadership has inspired a resurgence of belief in the possibilities of forest production. Abbott M. Fox, chairman, characterized the needs of the forest industries as being sufficiently extensive to put all unused forest acreage to work.

Representing the Minnesota committee, Ted Willits, Mando Paper Company, related legislative accomplishments, particularly the Nursery Law and the co-ordination of assesing procedure. John Hoene, secretary described the committee's State-wide public relations effort intended to familiarize the public with the importance of Minnesota's industries.

Harold S. Crosby, secretary of the Wisconsin committee said that approved Industrial Forests now approached the half million acre mark with applications pending on some forty thousand acres. F. G. Wilson, Wisconsin Conservation Department observed that many of the reforms necessary to successful industrial forestry in other states had already been corrected by legislation in Wisconsin. He said that when persons could take pride in the looks of a logging job after it was finished, then commercial forestry was getting somewhere.

R. N. Cunningham, Lake States Forest Experiment Station stated that while forest growth was now approaching forest drain, there is too much young timber and too little mature timber in the Lake States and the area is falling far short of meeting its lumber needs. Two films, "Green Frontiers" and "Paper, Mister" followed a discussion on Mr. Cunningham's talk and the meeting closed the next day with field trips to plantations of the State of Wisconsin and the Consolidated Water Power and Paper Company.



Newly elected chairman of the Wisconsin Committee, Lake States Forest Industries Information Committees is F. G. Kilp (left), Nekoosa-Edwards Paper Co. Shown right is Stanton Mead, Consolidated Water Power & Paper Company, retiring chairman

▼

BRITISH PAPER NOTES (September, 1948)

We referred in our previous notes to a slight loosening of the control of paper and as anticipated this feature has been continued. Quite recently it has been announced that the Merchants L.2. quota was to be advanced by 10 per cent, from 80 to 88 per cent. This quota is based upon the paper merchants sales from stock in the 2nd and 3rd License Periods (June-November, 1940) and was originally instituted to avoid numerous license applications from printers and other consumers for very small quantities of paper. This extra 10 per cent, although not representing a great amount of tonnage, effects a certain freedom in supplying the many small parcels of paper needed for odd printing jobs. Concurrently the bulk tonnage allowed to the coating mills to cover small requests by the paper merchants has been increased by 50 per cent representing another step towards the easing in paper supplies.

It is natural that these small "gifts" increase the hopes of still more supplies in the near future, but at the moment, the several combined groups of paper consumers and converters receive quotas of paper much below their prewar rates. The periodical press, for instance, obtains only 35 per cent of the prewar quota and since 1939, no new national journal of any description has been launched, owing to the fact that only 2 cwt of paper per month is allowed by control for such ventures. But it would seem that the trade has reached the stage when some of the popular journals find it necessary to offer inducements to maintain and increase reader appeal. Whether it is expected that the near future will witness the return of some form of competition is not disclosed, but two recent items would seem to confirm this. Some of the journals for women are returning to competitions and at the annual general meeting of George Newnes Ltd., publishers of many popular journals, Sir Frank Newnes stressed the inadequacy of paper supplies to the trade, technical and periodical press. He considered that these papers had strong claims for additional paper not

If you're interested in valves that will give you any or all of these operating advantages then you'll be interested in

NON-CONTAMINATING

MINIMUM MAINTENANCE

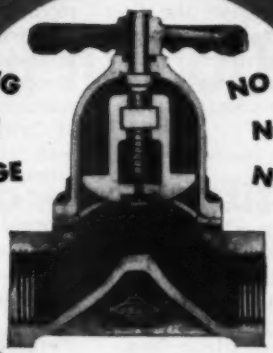
NO VALVE STEM LEAKAGE

NO CORROSION

NO CLOGGING

NO SEEPAGE

GRINNELL - SAUNDERS DIAPHRAGM VALVES



Valve Open

Valve Closed

FOR CHEMICALS

Stainless Steel valves with special diaphragms are handling satisfactorily such corrosive chemicals as phosphoric, acetic and chromic acids.

FOR BEVERAGES

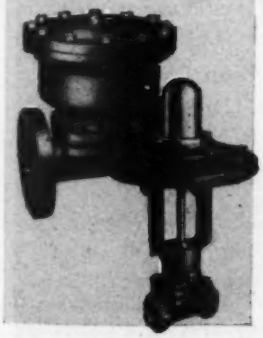
Bronze valves with socket ends (left) and with hose threaded end (right), both with special white rubber diaphragms, are stopping leaks and cutting maintenance to the bone in breweries handling millions of barrels of beer.

FOR PULP and PAPER

Rubber lined valves are setting new performance records handling pulp, alum and sulphuric acids in paper mills.

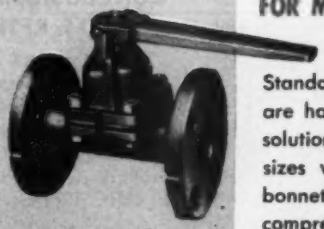
FOR TEXTILE PLANTS

Aluminum body valves with rising stems have won enthusiastic approval in bleacheries handling hydrogen peroxide and other chemicals.



FOR FOODS

Piston-operated valves (left) and air motor operated valves (right), both glass lined and with proper diaphragms, are providing remote control in plants handling sodium chloride, sodium hydroxide, sulphuric acid and fruit juices.



FOR MINES

Standard rubber-lined valves are handling highly abrasive solutions and slurries. Small sizes with quick-operating bonnets are widely used on compressed air lines to prevent leakage.

Grinnell-Saunders Diaphragm Valves may eliminate valve troubles and cut valve maintenance on your pipe lines. Available in any combination of valve bodies and linings, diaphragms and operating mechanisms. State your requirements or ask for Catalog 2-S on "Grinnell-Saunders Diaphragm Valves". Grinnell Company, Inc., Providence 1, R. I. Branch warehouses in principal cities.

GRINNELL

WHENEVER PIPING IS INVOLVED

only to satisfy home demands and to render full service to the community, but to maintain and increase the distribution of these journals in the overseas markets, "where under present conditions they have to compete with better values of other countries more favorably placed."

At the same time the subject of paper supplies to newspapers is again being discussed. In Parliament it was pointed out recently by a Labor M.P. that Great Britain proposed buying 50,000 tons of newsprint from Canada during 1949 at a cost of $5,000,000, whereas if this money was expended in purchasing pulp wood from Newfoundland for making into newsprint, it would produce over 160,000 tons of paper, and if one third of this production was exported the cost of the pulp wood would be covered.

During the first eight months of this year newsprint imports have totaled 81,174 tons, a decline of 26,875 tons in 1947, and of this total 84 per cent came from Canada, providing 36,686 tons, and Newfoundland, providing 31,826 tons. But, during the same period, imports of mechanical pulp have reached 207,863 tons, 30,500 tons more than during January-August 1947.

The total imports of papermaking materials into Great Britain to date this year is 1,029,407 tons representing an advance of 232,276 tons in last year and 75 per cent of the prewar rate. Chemical wood imports are nearly 540,000 tons and represent an improvement of approximately 136,000 tons in 1947. It is noted, that included among these imports of materials for January-August this year is 17,420 tons from the U.S.A. This total compares with 14,552 tons in 1947 and 27,282 tons in 1938, and incidentally, while the present cost is approximately £50 ton, the cost last year was £30 and in 1938, £12. Imports of materials from the United States are therefore costing Great Britain four times as much as prewar.

Additional supplies of materials are also being derived from the increased waste paper collections, consequent upon the competition organized by the Waste Paper Recovery Association in the spring. So successful was this competition that another is being organized for the autumn and winter months and a further £5,000 in prizes is being offered to those councils which improve upon their returns during the first competition and to other councils now wishing to join in the competition.

That available supplies may be made to go farther in these days of perpetual shortages, is an admirable thought, and doubtless prompted the holding of an international conference in Paris recently on the subject of paper sizes, or in other words, our old friend standardization. It has been found that a number of European countries have successfully adopted the standard size of 210 x 287 mm (8¼" x 11$\frac{1}{16}$") with other sizes having dimensions in ration to 210 x 297 mm and it is further suggested that if this size was adopted by the British papermakers it would aid them in their export drive. Unfortunately, this size does not fit in with any size, standard or otherwise, at present used in this country. It is remarkable that while standardization is recognized as a useful means of saving time and money, practically every country presents a certain reluctance in adopting it. In Germany, for example, standardization was first suggested as far back as 1798, in Great Britain efforts in this direction date back to at least the days of World War I, and in other European countries the experience is similar. Yet with all this striving towards standardization, the trade proceeds in its old conservative way. Even in America with what was generally accepted to be a step in the right direction sixteen years ago, we find that as recently as 1945 "users of the industry's products are overwhelmingly in favor of adopting the proposed simplified standard basis for all paper and boards." Short of the Russian method, where it was decreed that on a certain day (October 1st 1928) in all departments, government offices and banks, certain standard sizes were to be used, there would seem to be no satisfactory method of enforcing this reform.

▼

L.S.U. LOOKS AHEAD TO CONCLUSION OF TWO-YEAR WASTE RESEARCH PROJECT

The Louisiana State University Engineering Experiment Station's research project on the treatment of kraft-paper mill waste is moving into its final phases after two years of basic investigation, announces Dr. Luis H. Bartlett, director.

L.S.U. is administering the project with the financial support of the National Council for Stream Improvement, organized by the pulp and paper industry to undertake a solution of its stream pollution problems. A budget of $10,000 per year has been granted by the council which may be increased. The council considers this project important enough to warrant continuous research with the result that it will be continued on a permanent basis.

The method of removing the polluting material from paper mill waste being studied is a special type germentation involving the use of molds, yeasts, and bacteria. These organisms destroy the polluting material in the waste from the mills. Several plant scale installations have proven successful. The problem at L.S.U. is to discover the fundamental mechanics of this bacterial process and methods of improving it. Results in the laboratory thus far have proven very encouraging.

▼

AUSTRALIAN PAPER NEWS

Overseas Newsprint Deal

Successful completion of Australian, United Kingdom, Newfoundland, negotiations in regard to newsprint has caused great satisfaction in Australian trade circles. Negotiations which were mentioned in these columns last month, were concerned with two separate newsprint deals, each of which will greatly benefit Australian newspapers.

According to *Newspaper News*, the essence of the principal deal is that Australian owned dollars which would have been used for the purchase of newsprint from two Newfoundland companies have been diverted into purchase of logs and sulphite pulp for shipment to Britain and subsequent manufacture into newsprint in one of the big Bowater Mills, the only mill in England which is equipped with the grinders to pulp the logs.

Implicit in this arrangement has been the voluntary suspension for a year by Newfoundland mills of contracts with Australia.

Approximately 25,000 cords of pulpwood from Canada and about 6,000 tons of sulphite pulp from the West Coast of the United States have been or are being forwarded to England. Total newsprint output from this raw material is estimated at about 30,000 tons.

Bowater Paper Company, Ltd.

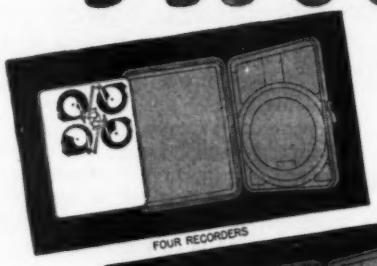
Bowater & Lloyds Sales Ltd., paper makers and merchants of Sydney and Melbourne, are now known as the Bowater Paper Company, Ltd.

10 per cent Reduction in Newsprint Cut

The Australian Government has announced a 10 per cent reduction in the cut which was made in newsprint last January; restoration will take effect as from October 1. January cut was made on newspapers using over 100 tons a year and only these will benefit from the permissible increase in consumption.

Additional newsprint will be of United Kingdom origin and will probably cost £70 to £75 a ton. This price includes a loading to compensate those

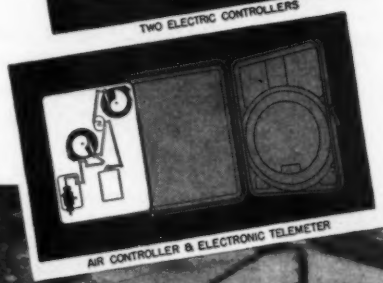
these and 100,000 more



FOUR RECORDERS

TWO AIR-OPERATED CONTROLLERS

TWO ELECTRIC CONTROLLERS



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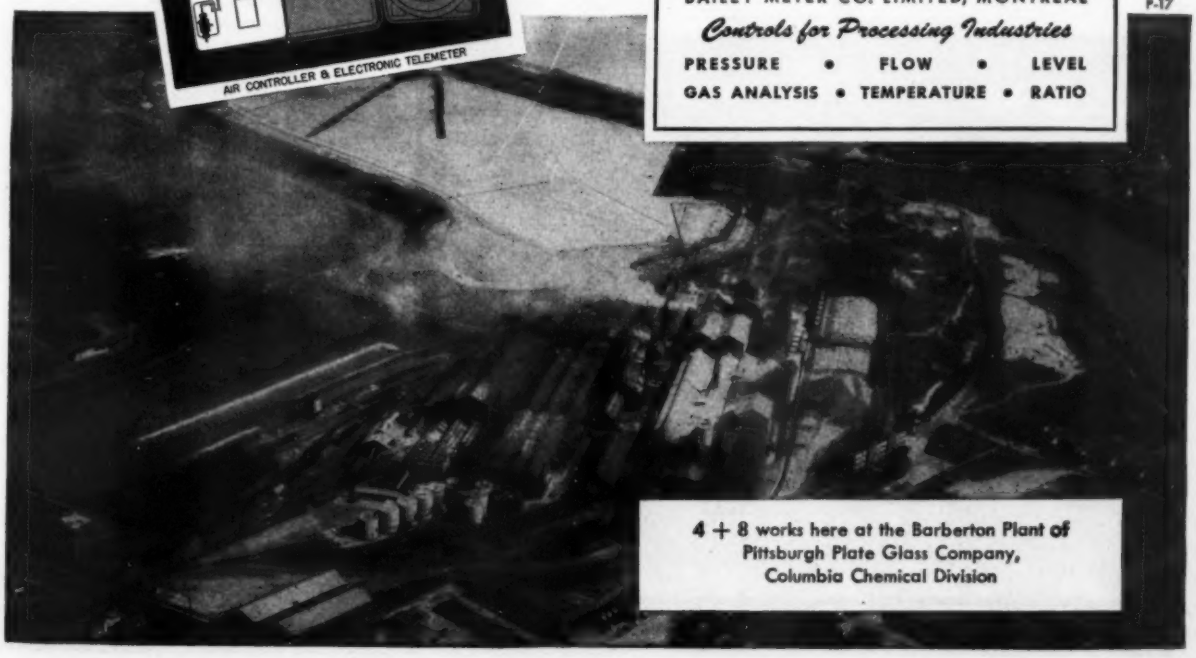


4 + 8 works here at the Barberton Plant of Pittsburgh Plate Glass Company, Columbia Chemical Division

who suspended Newfoundland contracts.

New Zealand Forest Products Ltd.

Sir Keith Murdoch, chairman of Australian Newsprint Mills, Ltd., Tasmania, who recently returned from a trip to New Zealand, has announced the provision of £300,000 and £400,000 (about $100,000 and $130,000).

Paper experts in Australia are speculating whether the imported kraft paper will be used in lieu of sulphite pulp.

It was interesting to note that ordinary and preference shares of New Zealand Forest Products rose sharply on all Australian stock exchanges after the announcement had been made that this large amount of Australian capital will be provided.

▼

HUBBS & HOWE COMPANY SALESMEN COMPLETE TOUR OF EASTERN PAPER MILLS

In line with its sales policy of giving sales representatives the most complete education possible regarding the products they sell, the Hubbs & Howe Company, paper and twine distributors, recently sent thirty-six salesmen on a tour of the following eastern paper mills:

Plymouth Cordage Co., North Plymouth, Mass.

Sherman Paper Products Corp., Newton Upper Falls, Mass.

St. Regis Paper Co., East Pepperell, Mass.

Ludlow Mfg. & Sales Co., Ludlow, Mass.

Interstate Bag Co., Walden, N. Y.

A. P. W. Products Co., Inc., Albany, N. Y.

Union Bag & Paper Corp., Hudson Falls, N. Y.

The Racquette River Paper Co., Potsdam, N. Y.

National Paper Products Co., Carthage, N. Y.

Sealright Co., Inc., Fulton, N. Y.

It was pointed out that although this is not the first trip of its kind made by Hubbs & Howe Company salesmen, it was the most ambitious and extensive of any made up to this time. This tour provided the salesmen with comprehensive, firsthand knowledge available in no other way.

▼

BOARD OF DIRECTORS OF SCOTT PAPER CO. VISIT N.Y. SUBSIDIARY PLANTS

The board of directors of Scott Paper Company visited the South Glens Falls and Fort Edward, New York plants of Scott's subsidiary, the Marinette Paper Company, last month. This was the first visit of this group to any Scott mill, other than the home plant at Chester, Pennsylvania.

Recognizing the outstanding production achievements that mark the history of the New York operations since these plants became a part of the Scott Paper Company family several years ago, the members of the board of directors toured the manufacturing departments in the morning. Following a luncheon at the Queensbury Hotel in Glens Falls, they continued the plant inspection until train time later in the afternoon.

On leave of absence serving as chairman of the board of governors, Federal Reserve System, Thomas B. McCabe, Scott Paper Company president, was unable to be present. All other members of the board, with the exception of one, made the trip.

▼

CONTINENTAL CAN CO. OPENS NEW FIBER DRUM PLANT

A new fiber drum plant, Tonawanda, New York, will start production this month, according to J. F. Price, general manager of Continental Can Company's paper converting division. This new plant is designed for the exclusive manufacture of Leverpak drums, and fiber-walled shipping containers.

The design of the modern one-story building of approximately 20,000 square feet of floor space, provides for machinery arrangement, power conveyors and enclosed unloading and loading docks to effect the greatest possible manufacturing economy from the receiving of raw materials to the loading of freight cars with the finished product.

Paul E. Kreischer, formerly assistant factory manager of the Van Wert (Ohio) plant, will be factory manager of the Tonawanda operation.

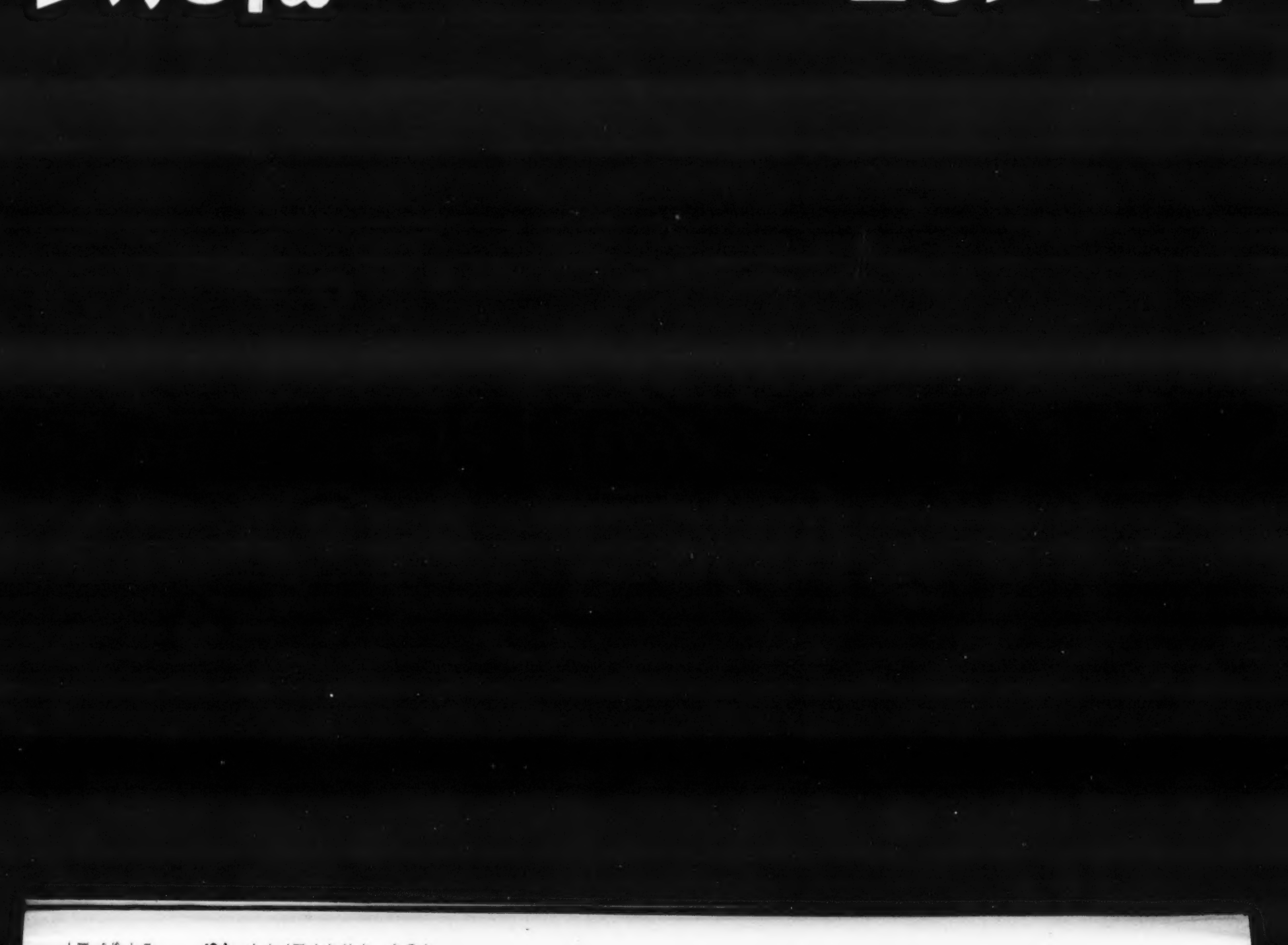
▼

CENTRAL PAPER COMPANY COMPLETES THREE DAY CONFERENCE IN MUSKEGON

A very successful three-day sales convention was held recently at the Central Paper Company, Inc., main office in Muskegon, Michigan. The sales organization sat down with the operating and executive staff and outlined an aggressive campaign for the coming year.

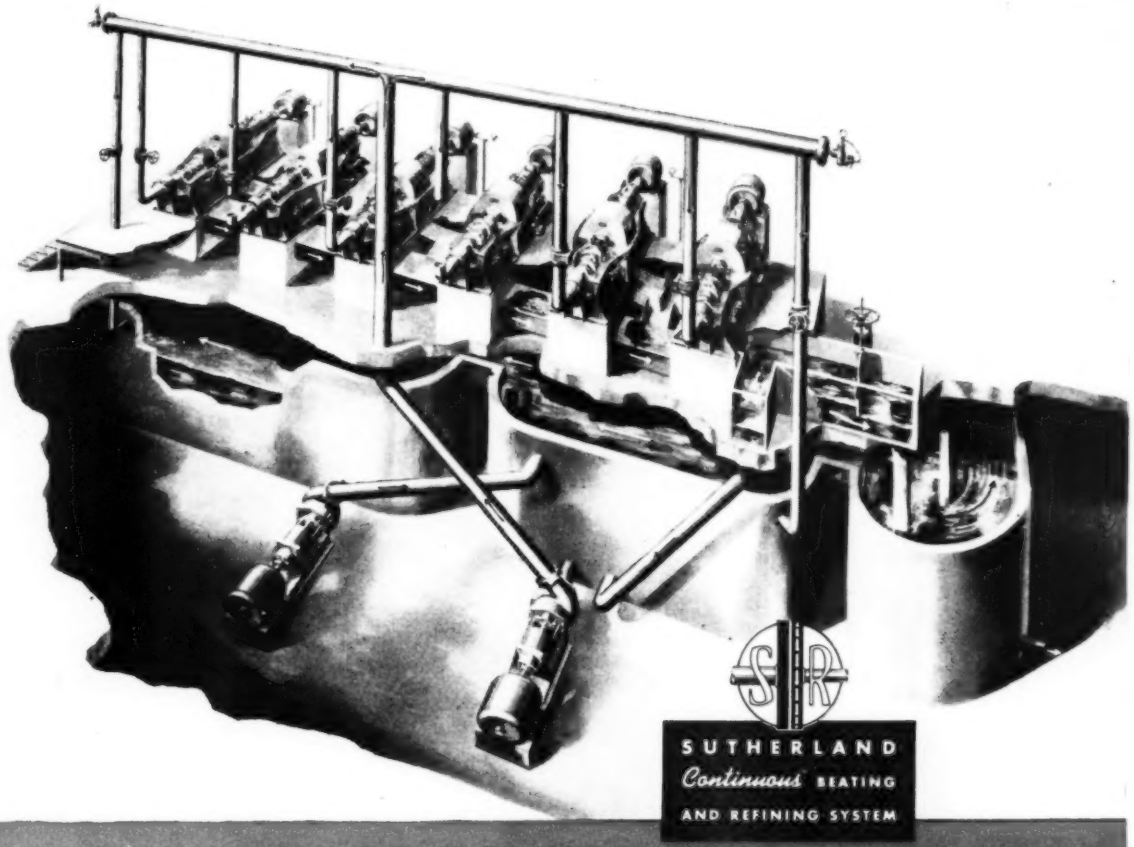
The convention program was divided into two parts; the first covering roundtable discussions on mill and supply problems. Assisting E. W. Pitt, vice president in charge of sales, for this portion were the various department heads of the company. H. J. Holtz introduced members of his operating staff, M. Flotow, Scott Smith, R. Knickerbocker and E. Wiberg, who instructed the visitors regarding plant operating problems and toured the company installations. R. D. Terrien, secretary-treasurer, and his assistants, M. Potter and W. Nachazel, covered financial matters. John McIntosh, assistant treasurer, outlined the features of the company's new budget control program. Boyd Knepper, in charge of production control, assisted by George Berg, displayed facts and figures regarding the company's modernization

Group of Hubbs & Howe Company salesmen visit the Racquette River Paper Company, Potsdam, New York, while on tour of eastern paper mills



Problem

Building costs are sky-high, so if your present stock preparation room is jam-packed with equipment and you need more, it means real money and possibly delays in getting building materials.



Solution

Put Sutherlands in where you now have your stock preparation equipment. You'll get more stock and have space left over, and get results quickly. Cut your capital investment by saving the cost of a building and get increased tonnage without sacrifice of quality.

• • •

SUTHERLAND REFINER CORPORATION · TRENTON, NEW JERSEY

Manufactured in the United States by Valley Iron Works Co., Appleton, Wisconsin

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SUTHERLAND

program. W. B. Johnson spoke on the pulpwood situation and R. C. Simpson, purchasing agent, took over on general raw materials. Peter Hanson, director of laboratory control, covered the subject of quality control. The subject of mill improvements was discussed by William Wrase, chief engineer, and J. Clemens, maintenance engineer. John Burr, personnel director, spoke on the labor situation.

The second part of the conference covered actual sales policies which were reviewed and formulated. Methods, products, developments, and new trends in paper products were discussed. One of the most interesting events of the entire program was a talk by George Post, director of Crescent Advertising Agency, on the subject of sales and merchandising sales promotion and advertising. Also assisting Mr. Pitt in the second part of the conference, and covering their various functions, were Dean Strickland, D. GeGlopper, W. Herzog, G. Mullen, W. Winey, and J. Prawdzik.

The prominent social highlight of the convention was the annual president's dinner given by C. W. Smith, company president, for 50 guests, members of the sales organization and company staff.

HAMMERMILL HONORS ITS 20-50 YEAR EMPLOYEES AT HONOR ROLL CEREMONY

Long service employees of Hammermill Paper Company, Erie, Pennsylvania, were honored last month, at Waldameer Park by the company at its annual honor roll ceremony. After a steak luncheon, the 600 Erie men and women who have been at the mill from 20 to 50 years, heard a brief talk on company business by Donald S. Leslie, general manager.

The first 50-year pin, having a special diamond setting, was given to Dr. Otto F. Behrend, first Hammermillite to complete a half-century of service and a founder of the company. In the absence of President Norman Wilson, the presentation was made by Mr. Leslie.

Thirty-four Hammermill employees, who, in 1948, completed 20 years of service and became new members of the service honor roll group, were presented with honor diplomas, gold watches, or shares of company preferred stock. Making these presentations, Dr. Behrend was assisted by Mr. Leslie, R. P. Price, general superintendent, and B. E. Claridge, vice president.

BRIEFS

▶▶▶ A NEW PAPER MILL designed to produce 50 tons of newsprint daily will be built at Hubbard, Ohio, is the announcement made by the Greater Youngstown Area Foundation. Newsprint will be made by deinking old newspapers. The factory's cost is estimated at $500,000 and should be in operation next spring.

▼

▶▶▶ A CORPORATION at Milwaukee, Wisconsin, was formed by Col. John S. Sensenbrenner and his son, James, for the distribution of fine papers. The new company will go under the name of Sensenbrenner Paper Company. F. James Sensenbrenner is president and Col. John S. Sensenbrenner is vice president and a director.

▼

▶▶▶ A NEW BUILDING erected in the center of Gordonston Park, Savannah, Georgia, by Union Bag and Paper Corporation was presented to the Girl Scout Association with fitting dedicatory ceremonies, on October 14. Keys to the cottage were formally presented by T. T. Dunn, resident manager of the Savannah Union Bag plant. The principal talk was made by Donald J. Hardenbrook, company vice president, who cited the marked advances in political and civil life made in the past few years by women in all parts of the world. He said the cottage was donated as a contribution to good citizenship.

▼

▶▶▶ THE CARBON PAPER SUPPLY has caught up with the demand, was the statement made at the New York York National Business Show by W. E. Bradley, chairman of the board of Allied Carbon & Ribbon Manufacturing Corporation. He said there was now no shortage of supply but that there has been a shift in demand from the old standard carbon papers to processed non-curl carbons.

▼

▶▶▶ MODERN METHODS of newsprint production were inspected at the Ontario Paper Company, Ltd., Thorold, Ontario, by 50 members of the Niagara peninsula branch of the Engineering Institute of Canada. Technical men from the entire peninsula and some from Buffalo, New York, made the industrial tour as part of their fall program of meetings and educational trips. The Ontario Paper Company recently boosted production to more than 600 tons of newsprint daily by a continued program of increasing efficiency and improving methods. Visitors saw the industrial alcohol plant which eliminates the old waste of sulfite liquor in newsprint manufacturing, turning it into a valuable by-product.

▼

▶▶▶ TWENTY-FIVE NEW members were inducted into the local chapter of the Kimberly-Clark Corporation's Quarter-Century Club at a dinner meeting at Hotel Niagara, Niagara Falls, New York. Principal speaker at the dinner, which was attended by approximately 160 long-term employees and their guests, was Ernst Mahler, executive vice president of the corporation. Charles H. Sage, vice president, was also a speaker at the meeting.

▼

▶▶▶ MERGER OF THE Seaport Paper Company, Portland, Oregon, wrapping distribution firm, with Carter, Rice & Company of Oregon, northwest paper distributors, was announced by James W. Murphy, president of Carter, Rice. In the change, William G. Batson, former owner of Seaport, joined Carter, Rice as sales manager of the industrial paper division and several other Seaport employees also joined the staff.

▼

▶▶▶ AFTER TWELVE YEARS with Container Corporation of America, and four years with Paper Container Mfg. Company, William J. Paisley has announced the formation of his own firm, Paisley Paper Products, Chicago, Illinois. The new concern will distribute folding boxes, corrugated boxes and paper, bags, wrapping paper, twine and cordage, paper cups, toilet tissue, gummed tape and similar related items.

▼

▶▶▶ A STUDY IS BEING made of the possibilities of establishing a pulp and paper plant in Belem, Brazil. The Guama River, accessible from the plant, will provide transportation facilities for the pulpwood reported to be available from the timberlands in the area. If it is decided to complete the proposed project, it will be the first paper mill in the Amazon region. (Published in *Foreign Commerce Weekly*)

▼

▶▶▶ IN HONOR OF 28 employees, with the firm 25 years or more, Milprint, Inc., Milwaukee, Wisconsin, held a dinner at the Schroeder hotel last month. Watches were presented to the employees.

CLEAN, BRIGHT

INTERIOR WALLS

• Another use for **Kalamazoo Glazed Tile.** Kalamazoo glazed tile used for interior walls in all sections of the mill provides bright, clean surfaces which are easily washed and which never need painting even when subjected to corrosive and damp conditions. A lifetime job.

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give him a **bigger bonus**

without budging your budget!

Sure he's happy—and you are, too.

He was expecting a $75 bonus. Then you decided to give the bonus in U. S. Savings Bonds. So he receives—not $75—not a $75 Bond—but a $100 Bond.

It looks like more—and it *is* more. Not just because every $3 put into Savings Bonds will pay $4 at maturity. These Bonds are builders of future security for employees and for the nation as well (which means for business). They're a powerful weapon against inflation. They make employees "holders of shares in America"—thus build enthusiasm for our traditional competitive system.

They pay *your company* a bonus, too—in increased employee contentment, which shows up as less turnover, reduced absenteeism, fewer accidents! All these benefits are being proved and re-proved every day in thousands of companies that operate the Payroll Savings Plan—the popular plan for the regular purchase of Savings Bonds by employees.

You're helping your employees, your country, and yourself by deciding to...

give the bonus in Bonds

...and by putting plenty of push behind the P. S. P. It's easy with the help you get—for the asking—from your State Director, U. S. Treasury's Savings Bonds Division. Call him now!

The Treasury Department acknowledges with appreciation the publication of this message by

THE PAPER INDUSTRY AND PAPER WORLD

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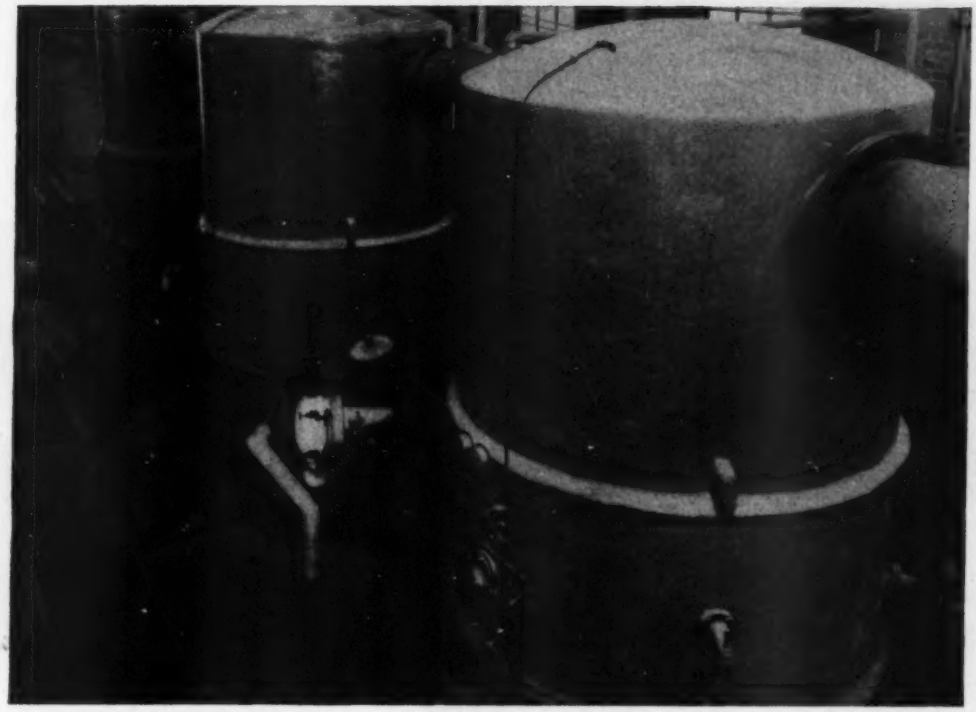

Has longer useful life
The three bodies of this multi-circulation caustic evaporator are constructed of $\frac{5}{16}$" thick Nickel-Clad Steel, with $\frac{3}{8}$" thickness in the heads. Designed by Zaremba Company of Buffalo for Niagara Alkali Co., Niagara Falls, N. Y.

Take a Tip FROM THE PRODUCERS WHEN YOU'RE HANDLING CAUSTICS

Producers of caustics were among the first to recognize the economies gained by building their equipment of Lukens Nickel-Clad Steel. They get the corrosion-resistant properties of *solid* nickel at the lower cost of *clad* steel.

Lukens Nickel-Clad Steel provides an interior surface of nickel, which is highly resistant to the corrosive attack of caustic soda, permanently bonded to a steel backing plate. Thus, the equipment has long life and the finished product is kept free of iron contamination.

Many other kinds of equipment similarly employ Lukens Clad Steels in the production, transportation, storage and use of caustic soda—evaporators, concentrators, settling tanks, flash and storage tanks, flakers, filters, heat exchangers, condensers and tank cars. Purity of product is maintained all along the line.

Specify Lukens Clad Steels—Nickel-Clad, Stainless-Clad, Inconel-Clad and Monel-Clad—and gain similar advantages and economies. For additional data, write for Bulletins 255 and 338. Lukens Steel Company, 408 Lukens Building, Coatesville, Pennsylvania.

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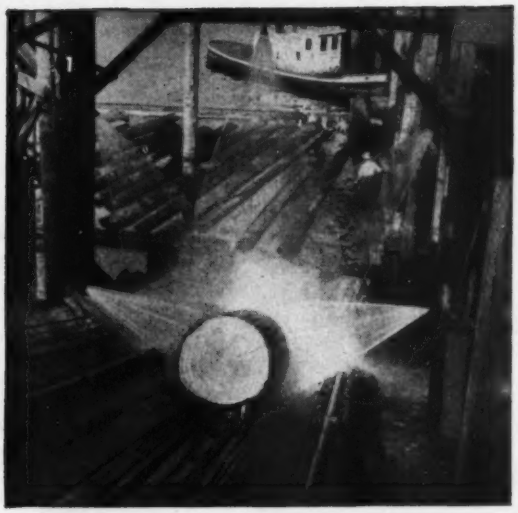
STEELS

SOLID METAL ADVANTAGES WITH CLAD STEEL ECONOMY

• • SPEED SCRAP TO THE MILLS TO MAKE MORE STEEL • •



KEEP THINGS MOVING

...with Rex pulp mill chains

FROM log haul right through the mill, the Rex Line of Standard Pulp Mill Chains is your best bet to keep things moving.

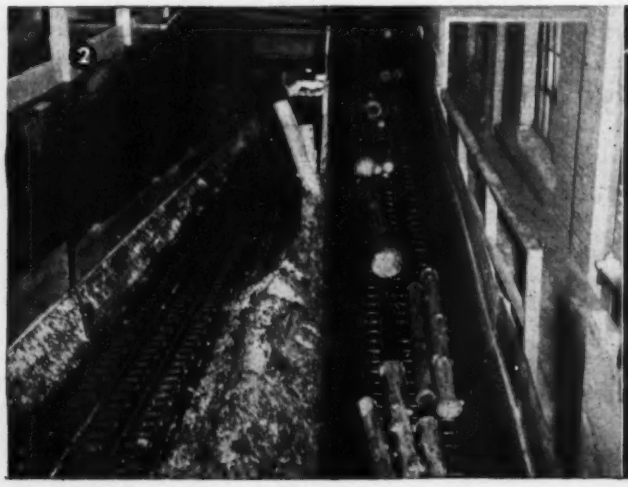
Designed and built specifically for pulp mill service, these dependable chains more than live up to their reputation of "where there's wood, Rex is the way to handle it faster . . . more economically." For the log haul, there's husky Rex Log Haul and Refuse Conveyor Chain or Rex Drop Forged Chain . . . each a husky combination of high strength and long wearing life that delivers the maximum in economical service.

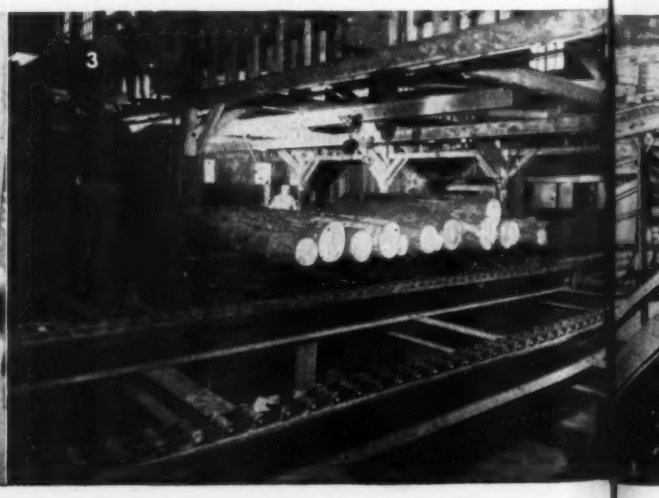
For the transfer conveyors and general all-round moving service, Rex Durobar Combination is your chain. With side bars of high carbon steel and block links of husky malleable iron or wear-defying Rex Z-Metal, these chains stand up under heavy pounding and abrasive sliding service . . . deliver more years of service. Rex H-Type and Rex Steel Chabelco Chains are also used for this service.

For positive, low-cost power transmission where speeds are high, you can't beat Baldwin-Rex Roller Chain. Where speeds are low and loads moderate, Rex H-Type Drive Chains are the answer. For heavy loads at moderate to high speeds, husky Rex Steel Chabelco Chains will give you a new high in low-cost power transmission.

In the refuse handling end of the business, Rex gives you H-Type Conveyor Chains, Mill Refuse Chains or Drop Forged Chains . . . all efficient movers of scrap, bark, and sawdust.

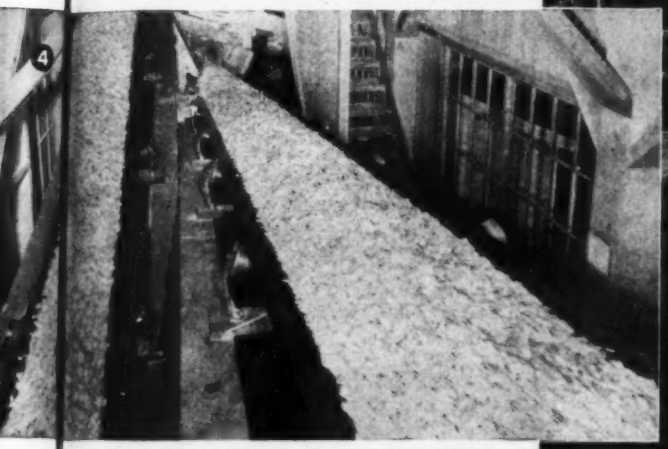
Right through the mill, you'll be a big step ahead with Rex Chains on the job . . . ahead in dependability . . . in more years of service. For all the facts, call your Rex Field Office or write Chain Belt Company, 1714 West Bruce Street, Milwaukee 4, Wis.

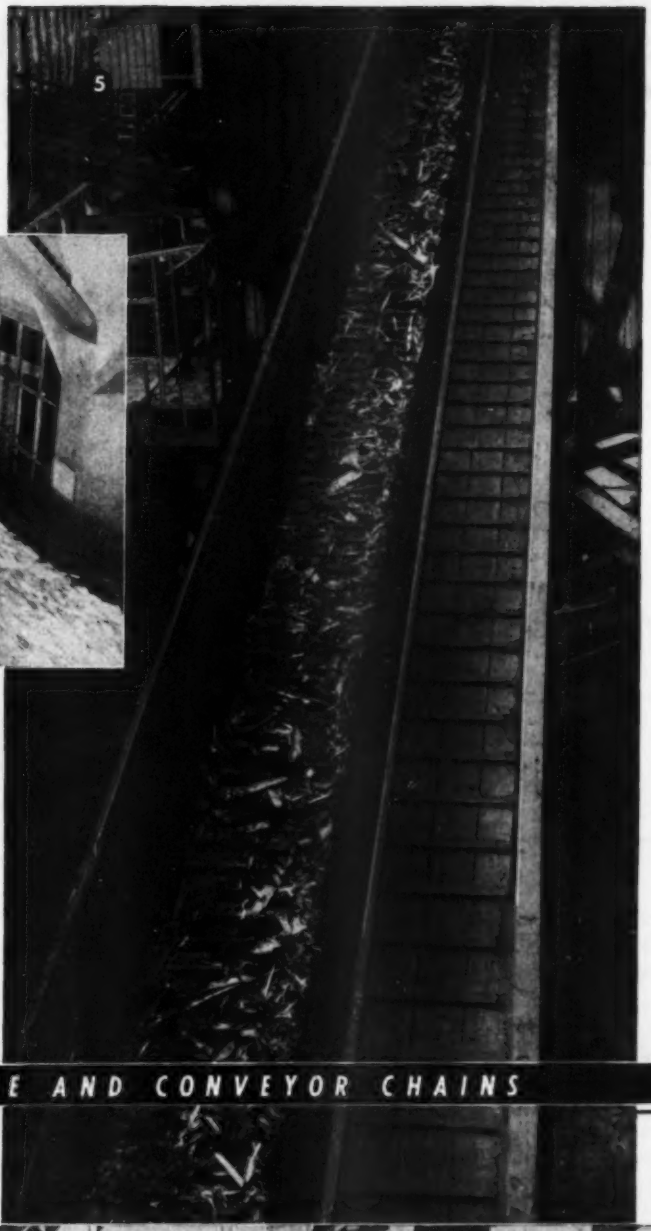




1. On the log haul, Rex Log Haul and Mill Refuse Chain keep the logs moving into the mill without fail.

2. Pulp wood moves steadily along from log haul to barking drum with Rex Combination Chain furnishing the ride.





3. In a West Coast Mill, Rex H-Type Chain carries logs to the debarker. Logs are stored on the chain to eliminate rehandling.

4. Rex Belt Conveyor Idlers assure a smooth trip for chips. These hard-working idlers assure far longer life for the belt.

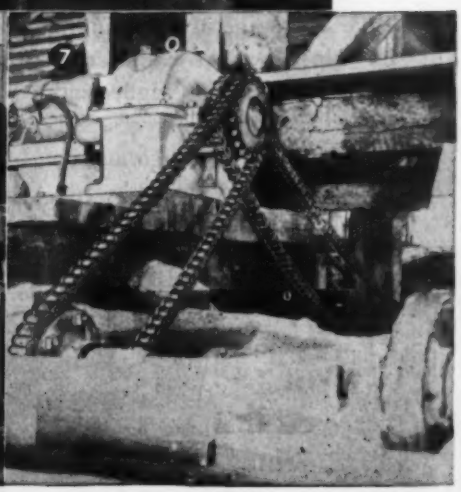
5. This scrap conveyor . . . a double strand of Rex H-116 Chain . . . carries bark from debarker to fuel storage.

6. Rex Drop Forged Chain equipped with wooden flights and Rex Belt Conveyors team up to assure smooth, fast handling of scrap from storage to scows.

7. Putting a lot of drive behind pulpmill conveyors are these two strands of Baldwin-Rex Roller Chain.

CHAIN BELT REX COMPANY

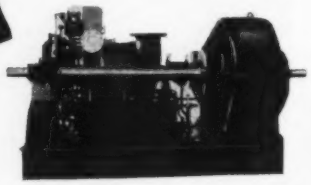
DRIVE AND CONVEYOR CHAINS



3 *Ways To More And Better Paper At Less Cost*

TYPICAL ARRANGEMENTS OF WORTHINGTON STEAM TURBINE PAPER MACHINE DRIVES

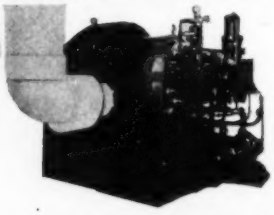
1.



DOUBLE END DRIVE—Extremely compact, ideal for limited space. Also reduces torsion stresses, an advantage when load is increased beyond original plan. Easily fitted into existing setup by removing section of back line shaft connecting each end of drive to line shaft by flexible couplings.

SINGLE END DRIVE—Where required, this type can be direct connected to end of line shaft. Is space-saving, positive-acting and eliminates power losses, maintenance expense and hazards of belted drives.

2.



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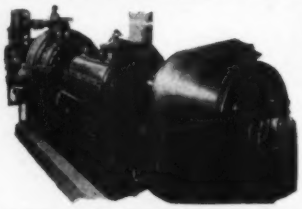
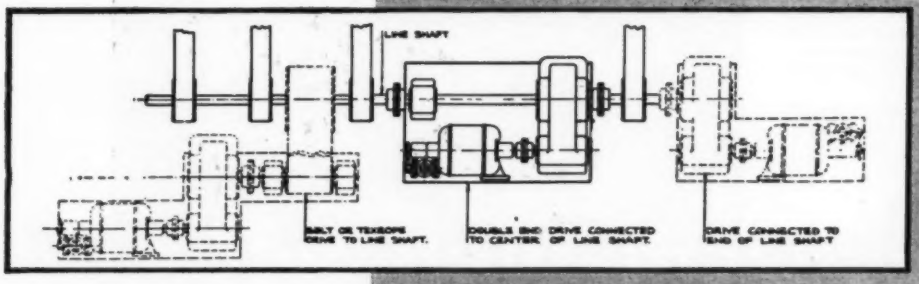


BELTED DRIVE — Furnished wherever conditions require. Units consist of turbine, reduction gear and pulley, on baseplate. Pulley, on separate shaft, is connected to gear by flexible coupling. The most satisfactory drive in many cases, especially with small hp's. Changeover can be made in a few hours.


LINE SHAFT
BELT OR TEXROPE DRIVE TO LINE SHAFT.
DOUBLE END DRIVE CONNECTED TO CENTER OF LINE SHAFT.
DRIVE CONNECTED TO END OF LINE SHAFT

Showing how power may be applied at center of line shaft (Double End Drive), at end of shaft (Single End Drive) or by belt (Belted Drive).

Get The Most From Your Machines

Take advantage of Worthington's long, successful experience in engineering paper machine drives. Get steadier, higher, more accurately controlled speeds, for bigger and better production. Get the efficient design and sturdy construction that assure long, trouble-free, low-cost service . . . And get the facts proving *there's more worth in Worthington*. Write to *Worthington Pump and Machinery Corporation, Steam Turbine Division, Wellsville, N. Y.*

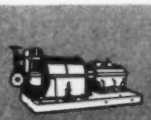
WORTHINGTON

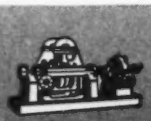
Steam Turbines

T8-9

A GREAT TEAM IN STEAM

Feed Water Heaters


Multi-Stage Turbines

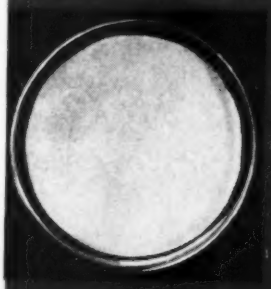

Boiler Feed Pumps

Turbine-Generator Sets

Single-Stage Turbines

Surface Condensers

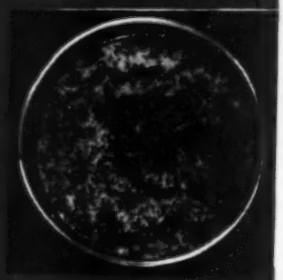
It's your decision...



stop

or

go



DOWICIDES make the difference!

Stop paper losses due to mold—use the Dowicides!

Corrugated cartons and other paper products often deteriorate when stored under conditions of high humidity in damp warehouses. This condition is usually accompanied by unsightly discoloration of the package and offensive odor. Many processors have successfully used a Dowicide treatment to make containers for industrial products mold resistant.

This is only one of the many uses of the Dowicides in the pulp and paper industry. For further information on the application of these versatile fungicides and bactericides, contact your nearest Dow office.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

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Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle
Dow Chemical of Canada, Limited, Toronto, Canada

DOWICIDES

germicides and fungicides

CHEMICAL COMMENTS

NEW AROMATIC SPECIALTY FOR PERFUMES, SOAP, COSMETICS

C•64 is a new Dow Aromatic Specialty. It possesses richness and warmth, freshness and sparkle—making it adaptable to both modern and oriental type perfumes. Its odor is powerful and spicy, with a slightly minty touch. A highly stable, crystalline material, C•64 blends well with citrus oils and dissolves even in dilute alcohol. It will not discolor milled soap or cosmetic preparations and is therefore a valuable ingredient in the manufacture of those products.

PROPYLENE GLYCOL USED AS SHORTENING EXTENDER

The food industry is making increasing use of low-cost Dow propylene glycol because of its unusual properties as a solvent, humectant, preservative, and wetting agent. Through the wetting action of this highly purified material it has been found possible to extend the effectiveness of shortening in producing baked goods. Propylene Glycol aids in the dispersion of the shortening throughout the batch with a consequent saving of critical shortening not otherwise possible.

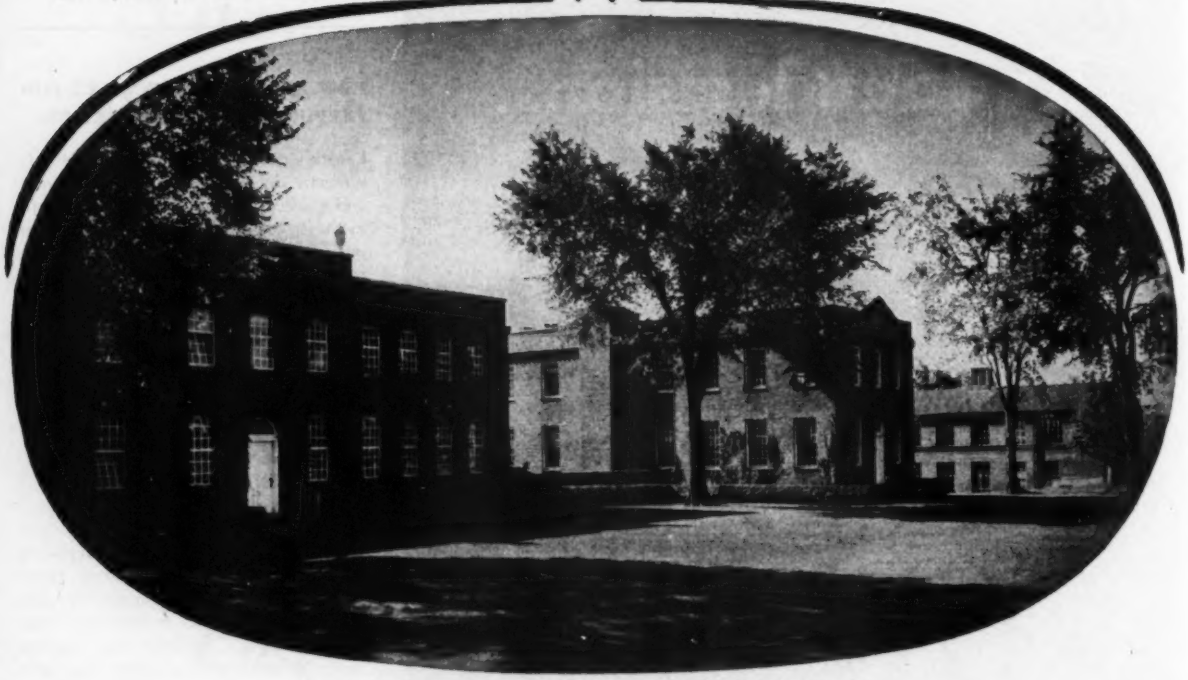
AN EFFECTIVE THICKENER FOR IMPROVED DYE PRINTING

Methocel, Dow cellulose derivative, has demonstrated unusual possibilities as a dispersing, thickening, and binding agent. One of its important applications is in textile printing. As a thickener for fast color salts and diazotized bases for printing on naphthol prepared grounds, it yields prints of exceptional brightness, smoothness, and sharpness of mark with greater penetration and efficiency of dyestuff. Methocel can be used in dyes either for machine or screen printing.

Additional information about any of these products is available on request.

DOW

CHEMICALS INDISPENSABLE
TO INDUSTRY AND AGRICULTURE



THE VANDERBILT LABORATORY—NORWALK, CONN.

Use the

VANDERBILT LABORATORY

★

Now, more than ever before, it is important to keep production at peak efficiency. Visit our laboratory, bring your problems and let our facilities help you solve them. Here, we can show you how our materials can be used to your best advantage. We invite and appreciate your cooperation.

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R. T. VANDERBILT CO., INC.

230 Park Avenue, New York City

Industrial Peace Can Be Achieved

▶▶▶ WHAT MAKES industrial peace? Labor-management harmony isn't a matter of happenstance. It results from hard work, intelligent leadership, and mutual respect for the responsibilities and rights of the other fellow. Above all, it results from an active striving for peace by both employers and unions who believe in the principles and actual practice of true collective bargaining. Such are the conclusions reached by the National Planning Association whose activities in studying the causes of industrial peace show real promise in promoting better labor-management relations. Separate studies of 15 companies that have had peaceful labor relations, have resulted from the conviction that more was to be gained by understanding the causes of industrial peace than from analyzing the cause of conflict.

To the credit of our industry, the outstanding record of industrial peace achieved by the Crown-Zellerbach Corporation and The Pacific Coast Paper and Pulp Industry with organized labor has been analyzed by the National Planning Association as one of the important examples of labor management harmony.

Both business and labor leaders, not only in paper and pulp, but throughout industry as well, can profit from the practical experience of companies and unions that have achieved constructive industrial peace. Although such experience offers no single cure-all for industrial conflict, one factor present in thousands of unpublicized cases, is an active search for peace by employers who believe in the principle and practice of true collective bargaining, and by unions which accept private ownership and operation of industry.

An analysis of the positive approach to peace by this company and by this industry with the International Brotherhood of Pulp, Sulphite, and Paper Mill Workers and the International Brotherhood of Papermakers, brings out a number of reasons why, for the past 14 years, the relationship between these groups has been one of harmony.

First, a sound basis of operation was established. From the beginning, management was liberally inclined, and whole-heartedly accepted the principle of unionization of its members. Just as important was the fact that the unions fully supported private ownership and operation of industry. They were industry-conscious rather than craft- or class-conscious. Thus, the two groups were no specific threat to each other. There was no real feeling of insecurity and thus no undue concentration on the means of insuring security. Without this mutual acceptance, a more intense need for defining rights and prerogatives would have existed. Insecurity breeds concern for security.

Back in 1934 when the unions first organized labor employed by this company, labor management relations got off to a good start. Experienced men guided the negotiations on both sides and avoided mistakes commonly made in many similar cases. No grudges were harbored because of initial quarrels. It was thus possible for management, without being unduly solicitous about the preservation of its rights, to retain those rights which are essential to the efficient operation of its enterprise. At the same time, the unions obtained basic institutional protection through the check-off, the maintenance of membership, management encouragement of union membership, and region-wide bargaining.

Just as important, however, is the sincere desire of labor and management to achieve a more amicable relationship in industrial peace. In every case peace can be destroyed by several possible eventualities. It is necessary for the unions to do an effective job in working for its members so that rival unions cannot obtain a foothold. Management and labor both must continually uphold and maintain its belief in the other fellows rights and responsibilities.

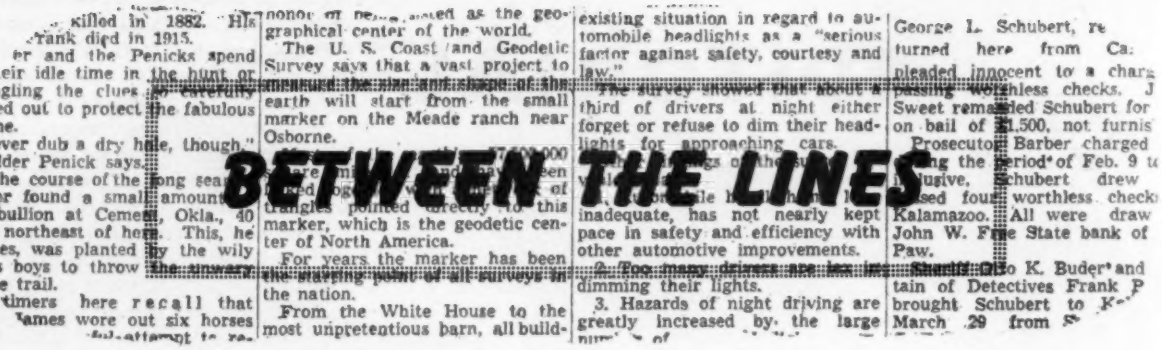
While favorable environmental conditions permitted industrial peace in the pulp and paper industry between Crown-Zellerbach and the two unions, it by no means assured the continuation of this relationship. The possession and exercise of a high degree of ability by the leaders in both groups were essential to the development of the structure of peace. The margin between peace and war even then has been a narrow one at several points; nor is its existence fully assured for the future.

It depends in part on the continuous harmonious relations between the two established unions, and the protection of the jurisdiction from attacks by other unions. Further, the maintenance of peaceful relations in a world full of unrest is always a precarious undertaking. Ideological and other pressures are constantly being exerted on both sides to interfere with the relationship which brings about peaceful conditions.

The industry, by evolving a well chosen group of personnel practices, set the stage for reciprocal relationships between men and management, based on good will and mutual responsibility. The two unions, already nationally known as responsible organizations, by originally approaching the industry with reliance on persuasion rather than force, helped to inaugurate collective bargaining in a friendly atmosphere.

While acceptance of region-wide bargaining laid the framework for cooperative dealings, it served as a barrier to rival unions; it standardized conditions among the mills and among the men; it gave rise to a greater sense of security for the industry and a greater feeling of equitable treatment by the men. It prevented wildcat strikes and raised the cost of industrial warfare by bringing all forces within the region into play. Both sides have exercised patience and tolerance and have evolved a division of responsibilities, powers, and rights, and of the income which has met each of their needs.

Undoubtedly a number of favorable factors have entered into the relationship at Crown-Zellerbach—homogenous working force, interesting jobs, regular employment in an expanding and profitable industry, but the essential element of success was the social skill of the parties at the bargaining table. Their willingness to work out a mutually acceptable sharing of power and rights, and their attempts to preserve the maximum amount of freedom helped in achieving industrial peace.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graphical center of the world.
The U. S. Coast and Geodetic
Survey says that a vast project to
measure the size and shape of the
earth will start from the small
marker on the Meade ranch near
Osborne.
triangles pointed directly to this
marker, which is the geodetic cen-
ter of North America.
For years the marker has been
the starting point of all surveys in
the nation.
From the White House to the
most unpretentious barn, all build-
existing situation in regard to au-
tomobile headlights as a "serious
factor against safety, courtesy and
law."
The survey showed that about a
third of drivers at night either
forget or refuse to dim their head-
lights for approaching cars.
inadequate, has not nearly kept
pace in safety and efficiency with
other automotive improvements.
2. Too many drivers are lax in
dimming their lights.
3. Hazards of night driving are
greatly increased by the large
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March 29 from S
BETWEEN THE LINES

Our Sense of Direction Is True

▶▶▶ IT TAKES A FOG to make one appreciate the sharp outline of familiar scenes and the brightness of the sky when the murk has lifted. Just before election day, the populace of the Mid-west groped its way here and there for two or three mornings and a couple of nights. The grim side of the picture is several people were hurt; and there were a few fatalities.

Nature and the nation analogous? Maybe. Nor season, nor high or low pressures can change the course of the earth or the position of the sun. True, too, the parade of parties and politics never can confuse the American people completely. When Mr. and Mrs. U. S. America take a pencil in hand to make their mark, it is done with deep conviction that they want the best of everything for their country.

Now that the decision has been made, precampaign vagaries will dissipate as does the fog.

Every morning practically every announcer on practically every radio station tells the American people, before their grapefruit or with coffee, what kind of a day it will be. "Be sure to wear rubbers and take umbrellas . . . leave the topcoat at home today, it will be fair and mild." How we depend on that weather man! Oh yes, we do, but we know he isn't always right —how we grumble when he misses, then the next morning we listen again to his predictions. We insist on being told what is to be, whether it comes to us via meteorology or Gallup polls—a far-cry from the cock weathervane on grandfather's red barn. I've never been quite satisfied with the answers to my question: "Why did they always used to paint barns red?"

▶▶▶ THE COMING GENERATION is taking on something of a "now look," which might make some of the oldsters think their childhood could have been different. National political history has just recorded the end of an era that will make the students scratch heads over history books—it won't be as easy for them to understand why the country had to suffer this or that. We can smile at the thought of their perplexities; we who knew the country in its prewar years, we who endured its war throes, and now watch while it struggles with postwar convalescence.

But "now look" at the youngsters, the realists who within the next few years will take over the leadership of the nation. A few days back they revolted against the influence of comic books, so much so that about 600 school children gathered in one community to hold a bonfire—2,000 comic books. And they did it in all seriousness with the ritual befitting a vow they made "not to read any more."

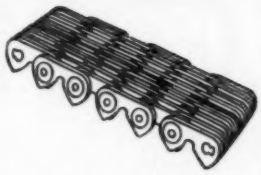
Defenders of the distribution of comic books came out with the assertion that the movement against these books arose because the oldsters were confused—they read books which they only *assume* were put out for children. And so the kids decided to take over and point the way by burning up the books.

Here's a wide-open field for authors who can write books that will interest youngsters. Classics like *Huckleberry Finn, Tom Sawyer,* the Dickens books, Horatio Alger's tales—and a lot of others. But in order to get back to the distribution of character building entertainment for the youngsters, there must be a co-ordination of the printed word, radio, and motion pictures.

—By Bessemer

The Right Chain for Every Use in Power Transmission and Materials Handling

. . . . by LINK-BELT



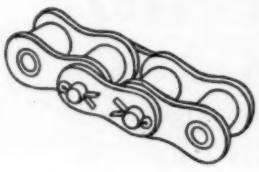
Silverstreak Silent Chain

The wide variety of chain types and the wide range of sizes, enable Link-Belt to offer industry the right chain for every use in power transmission and materials handling.

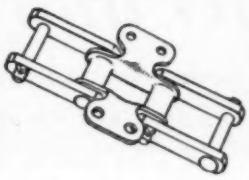
As pioneer and leader in the field of chain design and manufacture, Link-Belt invites you to use our engineering facilities. Our advice based upon broad and long experience is always available to you.

LINK-BELT COMPANY, 11,178-

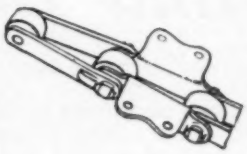
Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices, Factory Branch Stores and Distributors in Principal Cities.



Silverlink Roller Chain

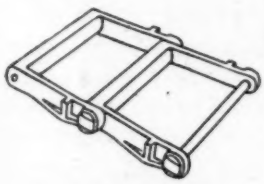


"C" Combination Chain

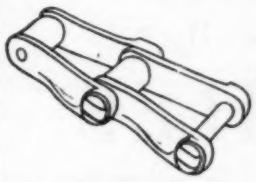


"1100" Roller Chain

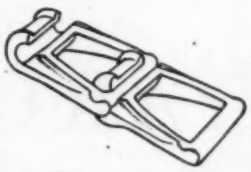
Rivetless Steel Conveyor Chain



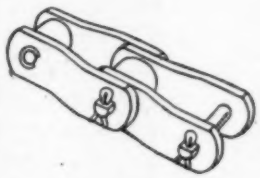
"H" Refuse Chain



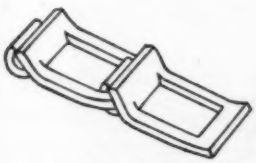
"H" Pintle Chain



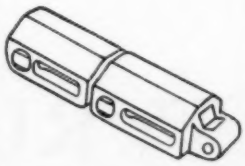
Ewart Detachable Link-Belt



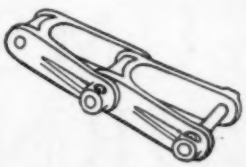
"SS" Steel Roller Chain



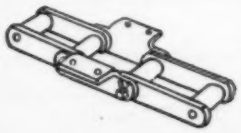
Steel Link-Belt



Transfer Conveyor Chain



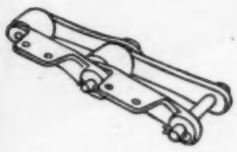
"800" Steel Chain



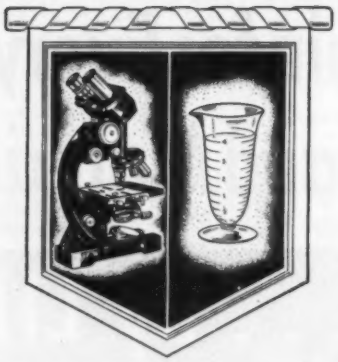
"SS" Steel Chain

THE SYMBOL OF QUALITY LINK-BELT

Chain . . by LINK-BELT



"MR" Roller Chain



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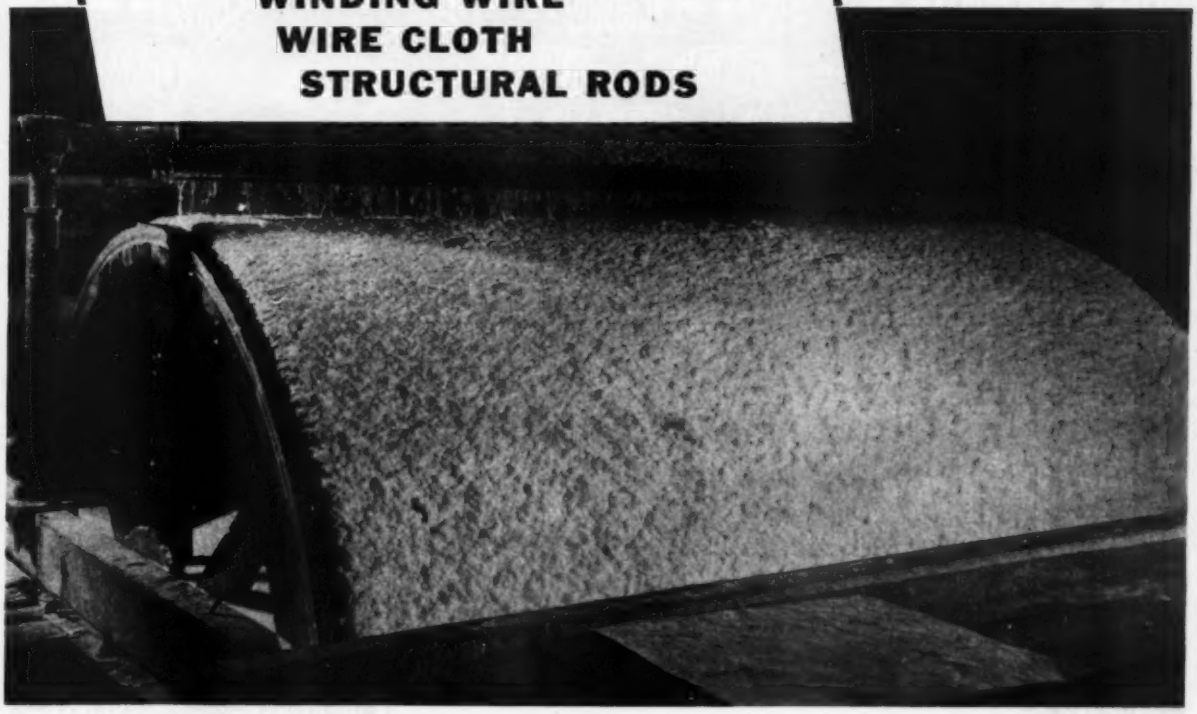

● *How can we keep production costs down?* Mill managers are asking this question more than ever in these days of rising material and labor costs.

Here's one way ∴ *a sound, production-tested way.* Leading board and paper mills are specifying MONEL as the metal for repairs, replacements, and new equipment.

MONEL cuts costs in *three* important ways — lowered labor maintenance, savings on replacement materials, reduction in "down" time. Equipment made of MONEL — such as washers, deckers, thickeners, cylinder molds — lasts longer and needs fewer repairs.

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For more information about the pulp and paper making applications of MONEL and other INCO Nickel Alloys, write for your free copies of: *"Monel, Nickel & Inconel in Pulp and Paper Mills,"* and *"Performance and the Reasons."*

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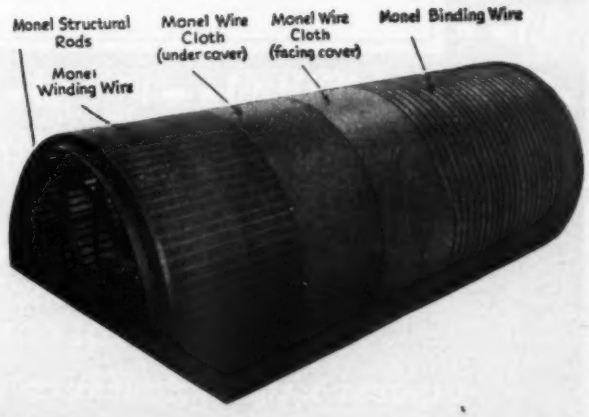

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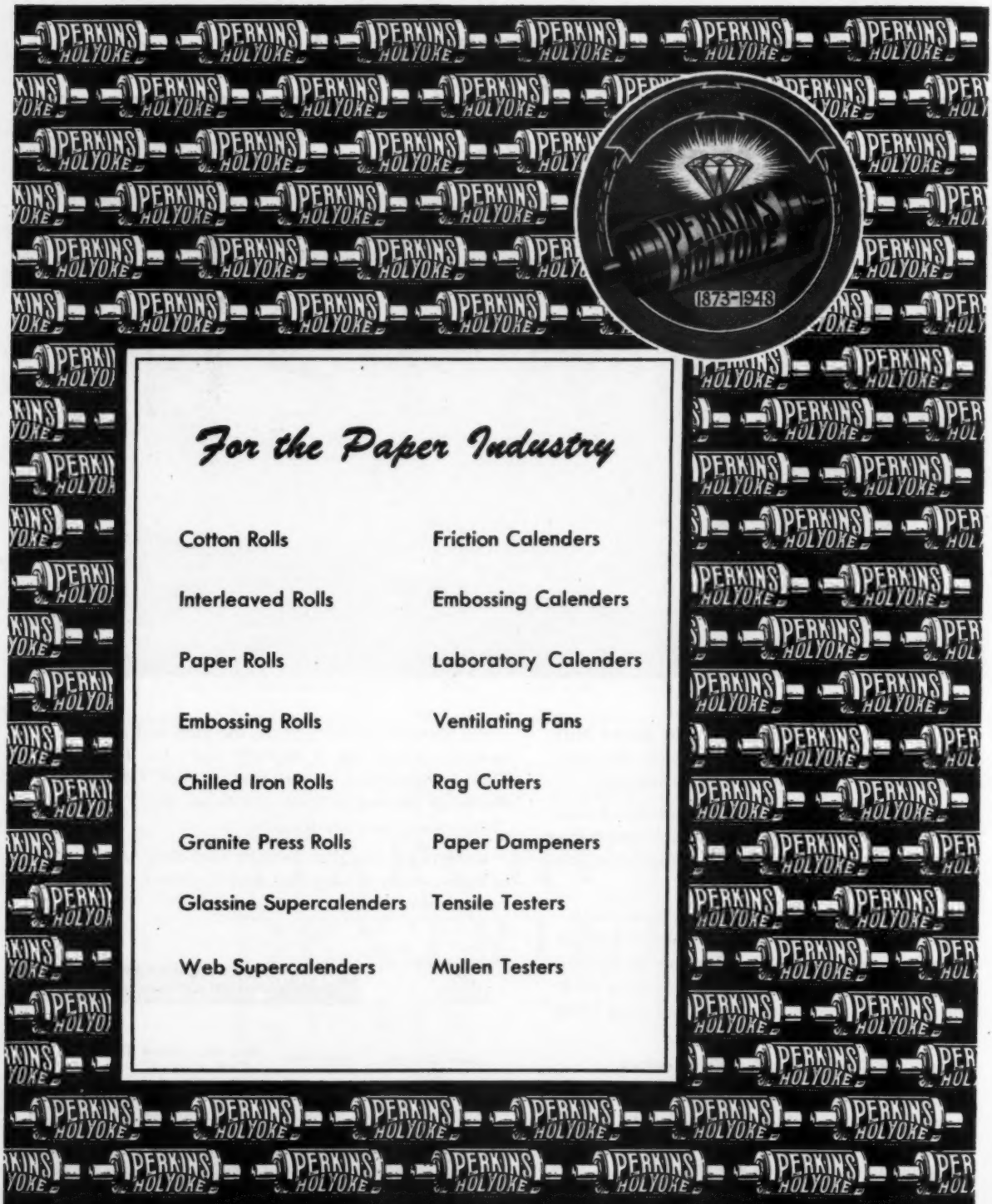

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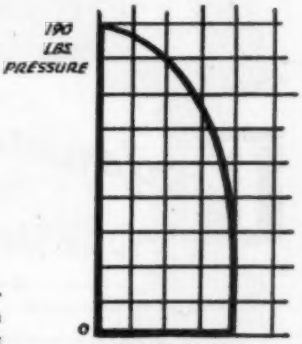

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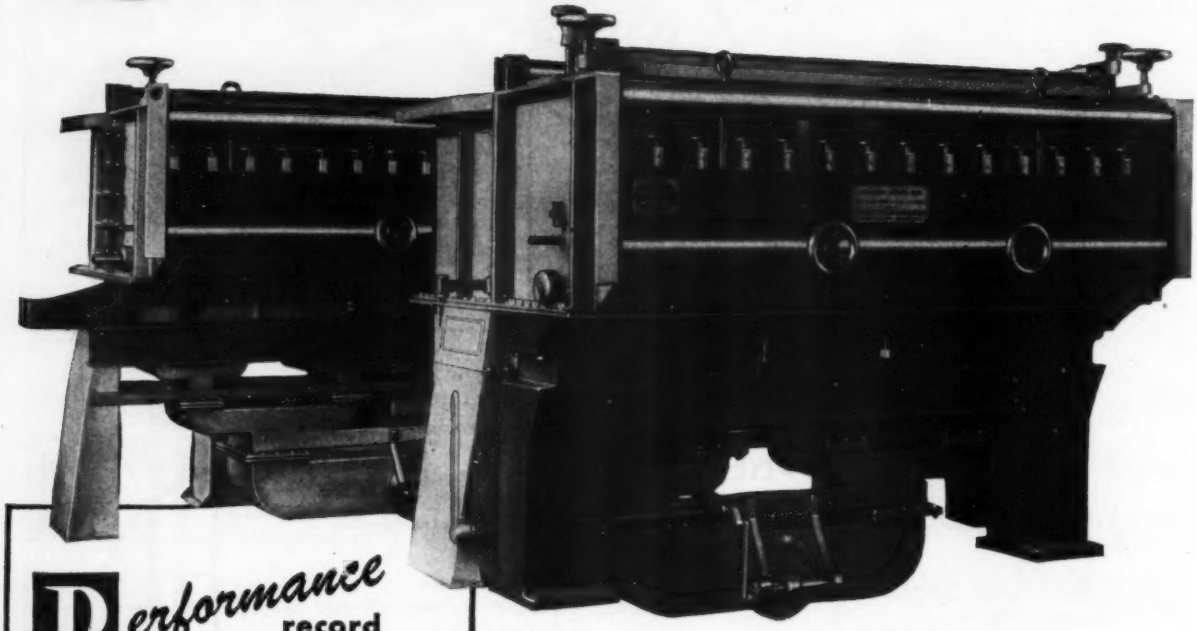
Uniform pond-to-wire delivery with Sandy Hill flow control units



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1. Speed stepped up 20%
2. Produces wider sheet in relation to slice width
3. Makes superior looking sheet
4. Spread under dandy is more uniform
5. Immediately increases use of water in the sheet
6. Good supercalender operation with paper produced at increased speed

THESE Sandy Hill flow control units are widely adaptable. They are adjustable to both high and low slices and equally good results are gained at high or low speed, or when a secondary slice is desirable.

Built into these units are the acclaimed advantages of two Sandy Hill products—the Bertrams Flow Distributor and the Neilson Slice. With these flow control units, paper may be made with the finest of caliper control and fiber distribution.

The slice may be pivot-carried, allowing advancement or retraction. Units come custom built, and are available for use with either deckle straps or ruler edge deckles.

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Cleveland Type Bearings
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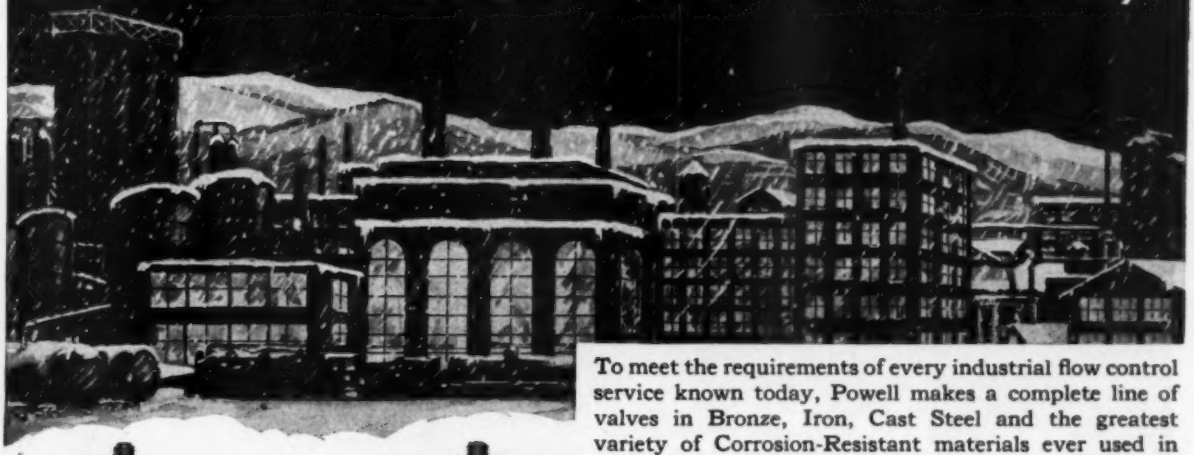
POWELL VALVES cover all Industry



To meet the requirements of every industrial flow control service known today, Powell makes a complete line of valves in Bronze, Iron, Cast Steel and the greatest variety of Corrosion-Resistant materials ever used in making valves.

We cannot introduce "Powell Valves for Corrosion Resistance" as a *new* feature, because with us they are long past the introductory stage. In fact it was more than 25 years ago that the Powell Special Design and Alloy Valve Division was established.

But we *can* feature the fact that today Powell makes the only *complete line* of Corrosion-Resistant Valves available to the Chemical and Process Industries.

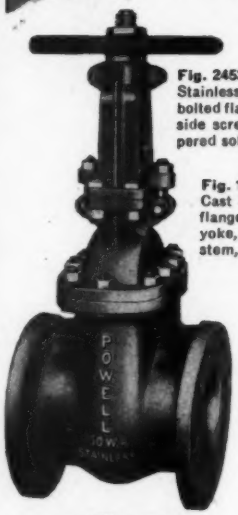


Fig. 2453-G—Large 150-pound Stainless Steel Gate Valve with bolted flanged yoke bonnet, outside screw rising stem and tapered solid wedge.

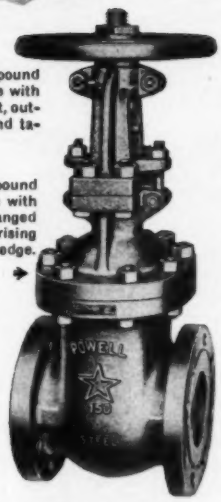


Fig. 1503—Class 150-pound Cast Steel Gate Valve with flanged ends, bolted flanged yoke, outside screw rising stem, tapered solid wedge.

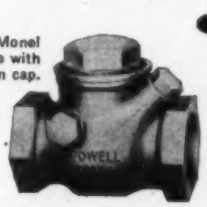


Fig. 1843 — 200-pound Monel Metal Swing Check Valve with screwed ends, screwed-in cap.

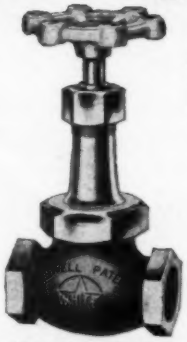


Fig. 1708—200-pound Bronze Globe Valve with screwed ends, union bonnet, renewable, specially heat treated stainless steel seat and regrindable, renewable, wear-resisting "Powellium" nickel-bronze disc.

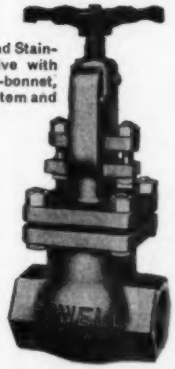


Fig. 1968—150-pound Stainless Steel Gate Valve with bolted flanged yoke-bonnet, outside screw rising stem and tapered solid wedge.

Fig. 2051-NI—150-pound Nickel "Y" Valve with flanged ends, bolted flanged yoke and outside screw rising stem.

Fig. 1793—Large 125-pound Iron Body Bronze Mounted Gate Valve with outside screw rising stem, bolted flanged yoke and tapered solid wedge. Also available in All Iron for process lines.

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Screen Room Layout?

Several mills are now planning layouts similar to this. To achieve operation on more nearly one level the knotters are no longer in the screen room but are used before the brown stock washers.

Notice particularly the following:

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- . . . Submerged inlets and forming aprons
- . . . Stock is fed like paper machine from "fan" pump
- . . . Intermediate underflow re-dilution between screens
- . . . Stock consistency and quantity controlled by regulator and Impco Stock Volume Meter
- . . . All lines side by side so any proportion of total lines can be used for "primary," "secondary" or "tailers"

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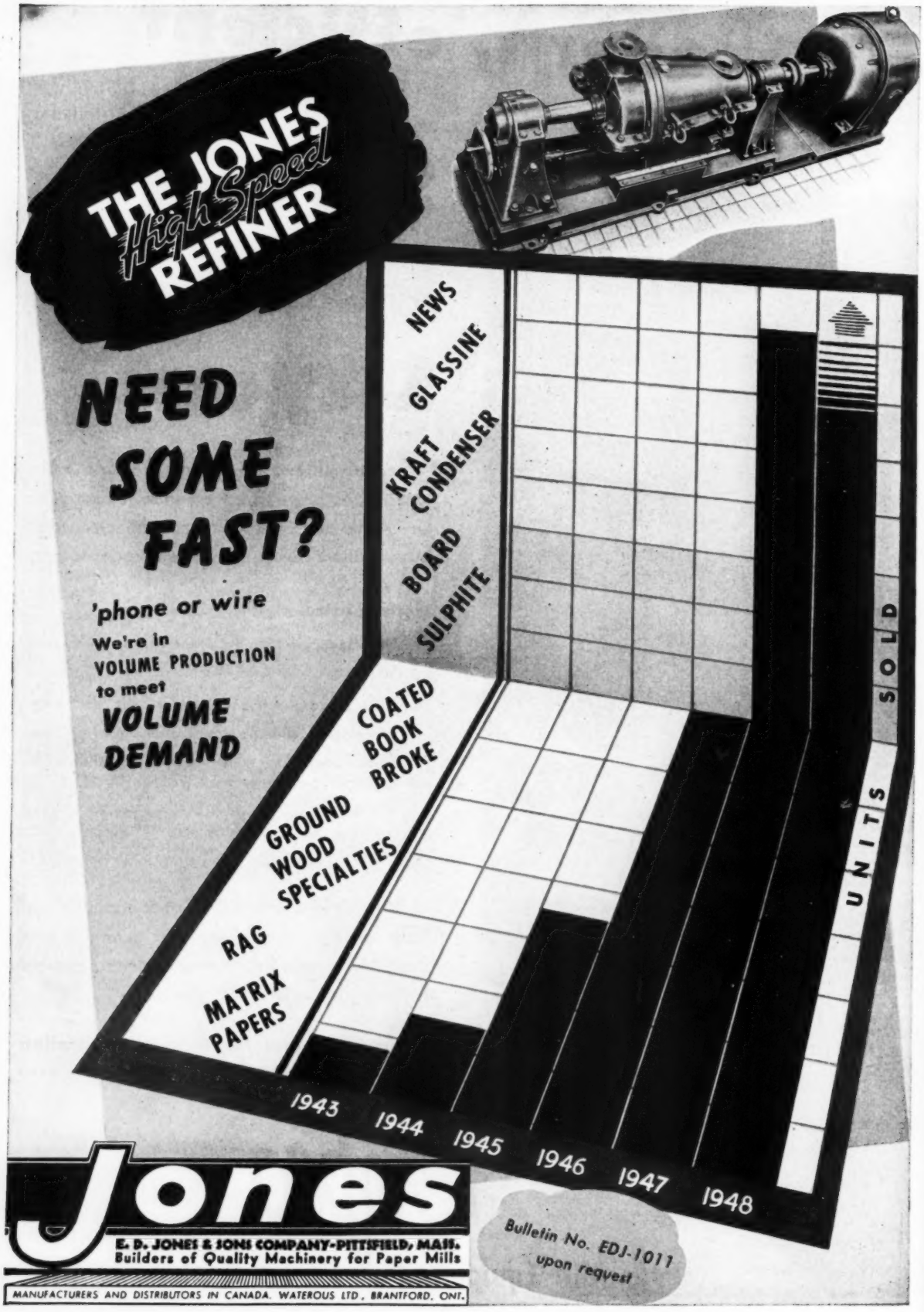
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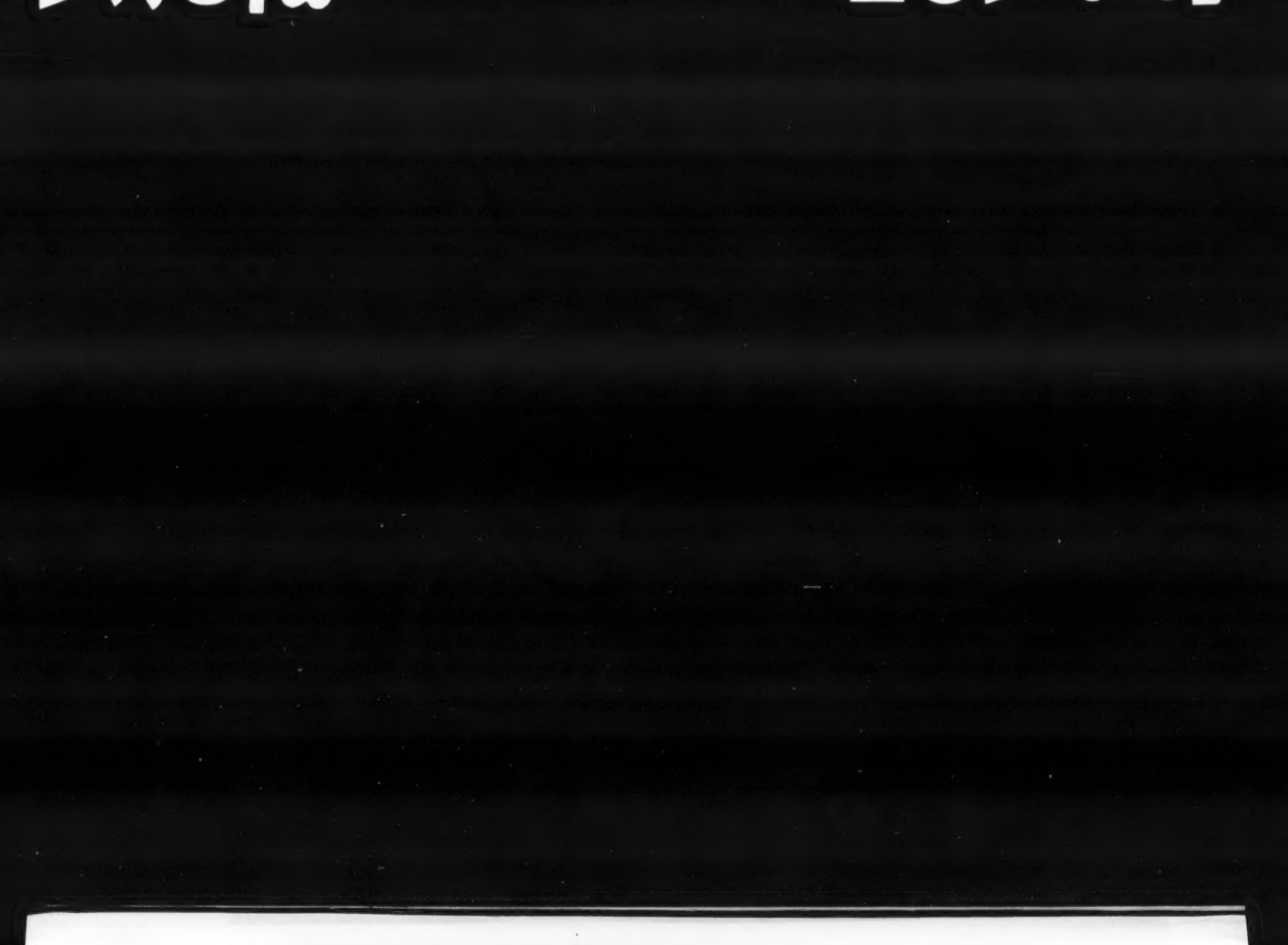


THE PAPER INDUSTRY
and PAPER WORLD

NOVEMBER 1948

Michigan Carton Company's six-million-dollar mill

Michigan's Newest Mill Starts Operation

By HARRY WILLIAMSON

▶▶▶ LONG A MANUFACTURER of high grade folding boxboard, the Michigan Carton Company recently marked another milestone of progress by starting up its new Angel Street plant in Battle Creek, Michigan. After the intervening war years, plans for expansion made in 1936 finally have come to fruition. Utilizing both batch and continuous stock preparation equipment, followed by an 8-cylinder board machine nicknamed the "Angel," this $6,000,000 mill is designed to turn out 300 tons of board per day.

Every possible improvement has been incorporated into this new mill and much of the "back-breaking" physical labor ordinarily encountered has been eliminated. Having achieved a high standard of efficiency and progress in its old plant in Battle Creek, the company, under its president, Lawrence G. Fell, utilized fully the combined knowledge and experience of its own staff, plus the know-how and ability of equipment builders and engineers.

EDITOR'S NOTE: Mr. Williamson's long experience as a practical papermaker and paper mill consultant should make his observations in this new mill interesting. He has contributed articles to this magazine over a period of nearly thirty years. Outstanding contribution was his Lessons in Paper Making, Parts 1 and 2, published from 1926 to 1929. These lessons dealt principally with the fourdrinier machine and stock preparation. At present, however, Mr. Williamson is writing a book on cylinder machine operation, part of which soon will be published in serial form in The Paper Industry and Paper World.

THE MEN —*Philipps, Shaw, Bohn, Harrison, Jones, Barnes*

THE MACHINE —*designed for 300 tons of board per day*

The Men

Major responsibilities were shouldered by M. C. Jones, director of purchasing and engineering; E. H. Barnes, general mill superintendent; W. J. Shaw, superintendent of the Angel Street mill; R. G. Bohn, plant engineer; L. F. Philipps, assistant plant engineer; and J. J. Harrison, technical director, all of the Michigan Carton Company. The plant was designed by Shreve, Walker and Associates, Detroit, Michigan, while construction and erection was handled by the Herlihy Mid-Continent Company, Chicago, Illinois. Stock preparation equipment was furnished by Shartle Brothers Machine Company, Middletown, Ohio; the board machine was built by the Beloit Iron Works, Beloit, Wisconsin; steam is produced in two new boilers built by the Springfield Boiler Company, Springfield, Illinois; and process water is filtered in a plant the equipment for which was furnished by Hungerford & Terry, Inc., Clayton, New Jersey.

From the architecture of the buildings to the minute details of equipment, design and layout, this mill is an example of the finest in modern board mill design. The main building, from stock preparation room through the finishing room, is 820 ft long. Operating floor is one story above the ground, leaving ample space for stock chests, pumps, and other equipment on the ground floor. Extensive glass block panels aid the maximum utilization of natural light and by diffusing the light, prevent glare in the machine room. Auxiliary buildings, such as the boiler house, storage warehouses and loading docks, form a composite whole that exemplifies up-to-date industrial building practice.

Raw Materials

Raw materials are received at an unloading dock that accommodates eleven railroad cars, all of which may be unloaded simultaneously. Truck shipments are readily handled at a platform designed for this purpose. Two large warehouses provide storage for some 12,000 tons of wood pulp and paper stock, all of which is segregated into bays or compartments according to its quality and the use for which it is intended.

Various grades of boxboard require a variety of different stocks including virgin wood pulp such as bleached and unbleached sulphite and soda. Wastepaper, such as white envelope, ledger, and flyleaf shavings, together with overissue newspapers and mixed wastepapers, comprise the bulk of the stock used.

Operations

The mill is designed as a four-stock system: (1) top liner, (2) subliner, (3) filler, and (4) bottom liner. The mill can operate as a one-, two,- three-, or four-stock system. For instance, a single-grade stock can make up a solid sheet, while double patent coated board utilizes three kinds of stock with a liner and subliner on top and bottom, and filler in the middle. This four-stock system provides a flexibility and versatility that permits the manufacture of almost any grade of boxboard.

Main operations are stock preparation, board fabrication and finishing; but here, the major finishing operation, that of cutting the boxboard into final finished sheets, is integrated in a straight line operation with the machine. Board coming from the machine can be put on a reel for rewinding and subsequent cutting, or can pass directly to an automatic cutter and double layboy where finished sheets are loaded directly onto skids. There the finished skidloads are removed with fork trucks and transferred directly to storage and shipping with a minimum of manual handling.

Elimination of "back-breaking" jobs, however, starts right at the beginning. Bales of raw stock are taken from the storage bays with fork trucks. These first run onto a floor scale, then deposit the weighed load on an inclined conveyor which elevates and transfers the material to the operating floor of the stock preparation building. Several loads of the fork truck make up each weighed charge to the batch operated Hydrapulpers.

This materials handling system is comprised of three inclined conveyors, each with its own floor scale, each of which discharges into a separate Hydrapulper. It is thus possible to control the exact amount of water to follow the formula designated for each particular grade of board manufactured. This initial control of stock and water proportions gives a controlled consistency which is the first step in obtaining uniformly prepared stock for the machine.

Stock Preparation

The stock preparation system, from the inclined conveyors through the machine headbox, comprises a complete Shartle-Dilts stock preparatory and cleaning system supplied by Shartle Brothers Machine Company.

Three basic types of units employed are: Hydrapulpers, Hydrafiners and jordans, together with the necessary

THE INDUSTRY *—is a leading asset to the community. About 150 workers are employed at the Michigan Carton Company's Angel Street mill*

trash removal and classifying equipment, thickeners, and agitators.

While a four-stock system is employed, only three Hydrapulpers and three Hydrafiners are installed. Bulk of the stock is filler prepared in a straight line—continuous system, the subliner and bottom liner can be prepared by either batch or continuous operation, while top liner is prepared in definite batches.

Ordinarily, the top liner is pulped in a 16 ft diameter batch Hydrapulper, the subliner and bottom liner are pulped in a 14 ft. diameter Hydrapulper arranged for either batch or continuous operation, and the filler in a 20 ft diameter continuous Hydrapulper. Top liner from the 16 ft Hydrapulper is discharged directly to a Hydrafiner circulating chest, while through a flexibility of piping arrangement the stock from the 14 ft diameter Hydrapulper can be discharged either directly to a chest, discharged through the cleaning system or blended with filler stock from the 20 ft Hydrapulper depending upon its particular use in the finished sheet of board. This Hydrapulper is equipped with a junk remover and ragger so that it may be used on filler stock.

The large Hydrapulper for filler stock is designed to run continuously. It is equipped with an automatic junk remover that continuously removes heavy trash too large to pass through the $\frac{3}{8}$ in perforations in the Hydrapulper extraction plates. A "ragger" removes baling wires, rags, strings, etc. This consists of a wire rope suspended in the whirling vortex of the Hydrapulper. Rags and wire cling to the rope and are slowly and continuously removed from the stock in the form of a twisted rope 6 in to 8 in in diameter.

The defibered filler stock at approximately 2 per cent consistency, passes through the perforated plates in the bottom of the unit to the regulating box. The regulating box is a 30 in diameter vertical tank divided by a vertical adjustable dam, this dam regulates the level of stock in the Hydrapulper tub while at the same time provides sufficient back pressure to prevent "felting over" of the extraction plates. The stock discharges over a dam and is pumped to the first section of the grit remover where it is diluted with white water to permit settling of heavy grit in the first settling chamber.

The stock then passes through three Dilts Classifiners where floating rejects are screened out and passed through a disintegrator pump and Selectrap or screen to reclaim all usable fiber.

Accepted stock from the Classifiners is discharged to the second settling chamber of the grit remover where it is further diluted for final settling. Rejects are removed automatically and continuously from the system. The clarified stock is then discharged by gravity to four thickeners from which it is discharged to a filler dump chest, thence to jordan regulating box—to jordans—to the machine.

Liner stocks are discharged to their respective chests and are passed through the Hydrafiners for a definite number of passes necessary to develop fiber characteristics for the particular grade of board being manufactured. From these units each type of stock goes to a storage chest from which it is pumped to the jordan headbox, which gives a 20 ft gravity feed to the battery of six jordans.

Jordaned stock is held in the machine chest until pumped to the machine headbox. All stock chests are equipped with Agi-flo circulation and pumping systems to keep the stock at uniform consistency and to provide constant delivery of stock to the succeeding operation.

Machine Headbox

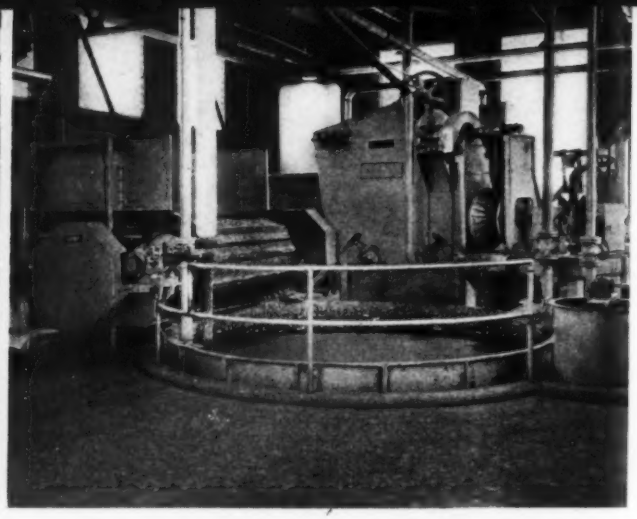
The machine headbox is designed to handle four types of stock. Each of the four compartments are equipped with eight separate gates which permits each kind of stock to be delivered to any one of the eight molds of the cylinder machine. Flow of stock from the headbox is regulated by the discharge gates and the head is regulated by an overflow gate. A wash down system aids the delivery stock to the screens and overflow returns to the machine chest.

Since filler stock comprises the bulk of the sheet formed on the machine (usually 4-6 of the 8 molds), its regulation can, in a measure, control the caliper and weight of the sheet. This is accomplished by a Harvey-Lewellen caliper control which changes the stock level in the filler headbox by adjusting the opening of the overflow gate.

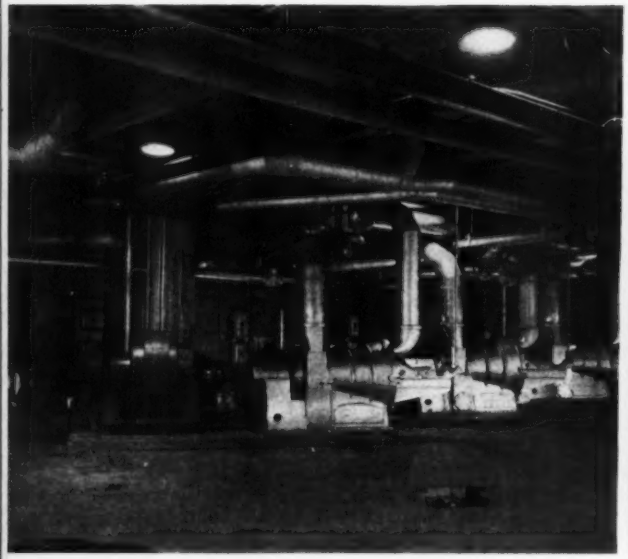
Supply of stock to eacn of the eight molds passes through individual Bird rotary screens. Screen vats and delivery box are constructed of stainless steel and are designed to eliminate turbulence in the flow and to prevent the entrainment of air. Constant and even flow to the cylinder mold is aided by a level control in the delivery box.

(Continued on page 1190)

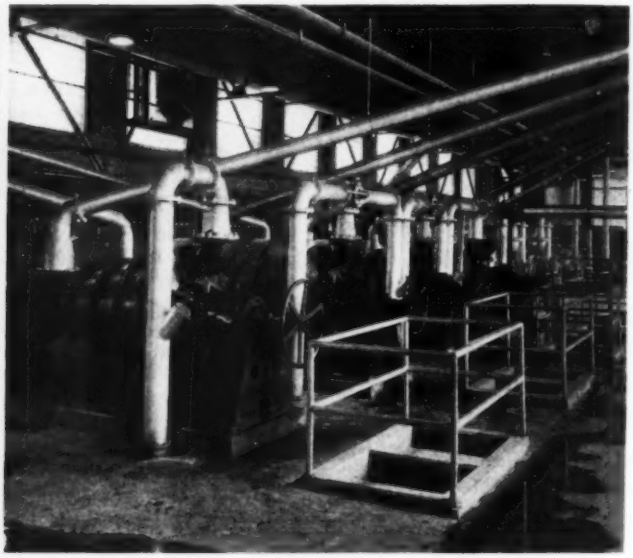
1 *Incline conveyors carry weighed paper stock to the operating floor of the stock preparation building*



2 *Weighed stock with a measured quantity of water is slushed up in this 14-ft diameter Hydrapulper*



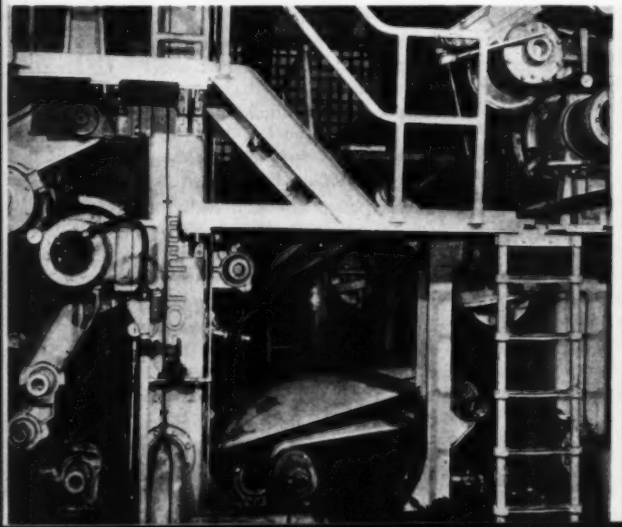
5 *This battery of Hydrafiners, hooked up to cycling chests, are used on liner stock prior to jordaning*

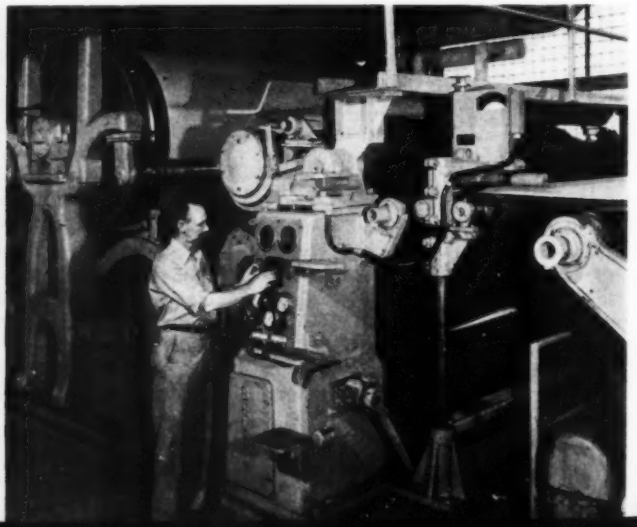


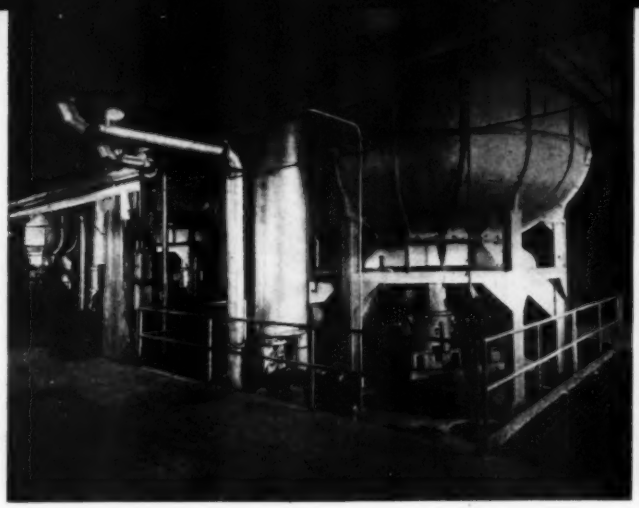
6 *Six jordans, fed by gravity from four-stock headbox, give stock final treatment before going to machine*

9 *Sheet passes through main suction press (right) and reverse suction press (left), then to smoothing press*

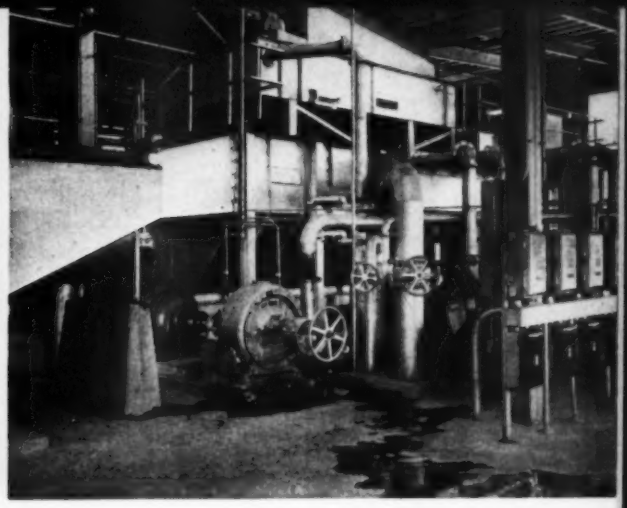
10 *Just before entering smoothing press, sheet passes through caliper control device*



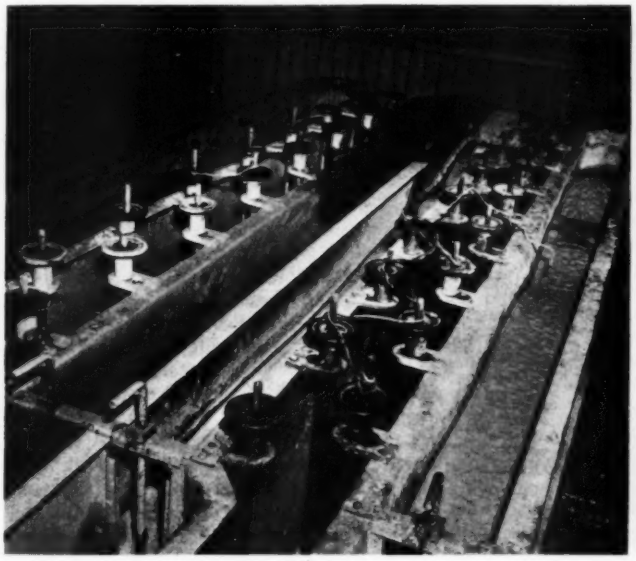




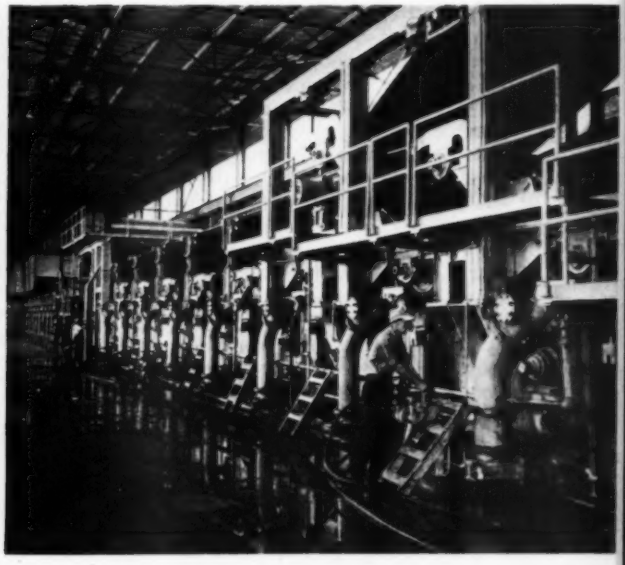
3 *Filler stock is prepared in Hydrapulper. Slushed pulp is discharged through vertical column at left*



4 *Grit removal and classifier system. Accepted stock passes over the deckers at left and then to storage*



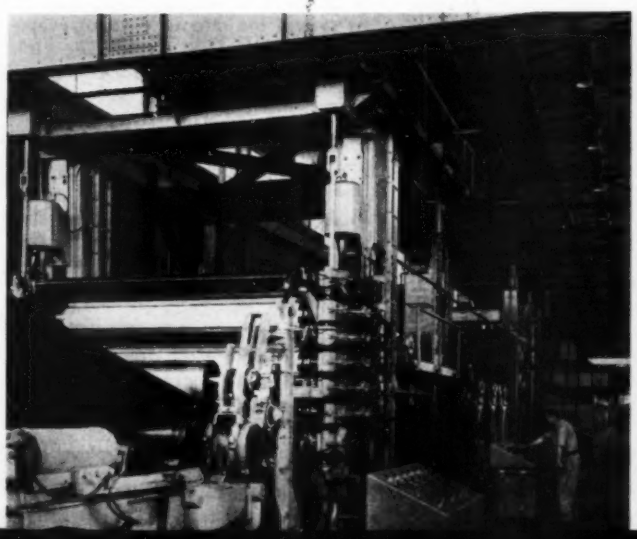
7 *All stocks go through this four-stock headbox to screens below; then to any of 8 molds on machine*

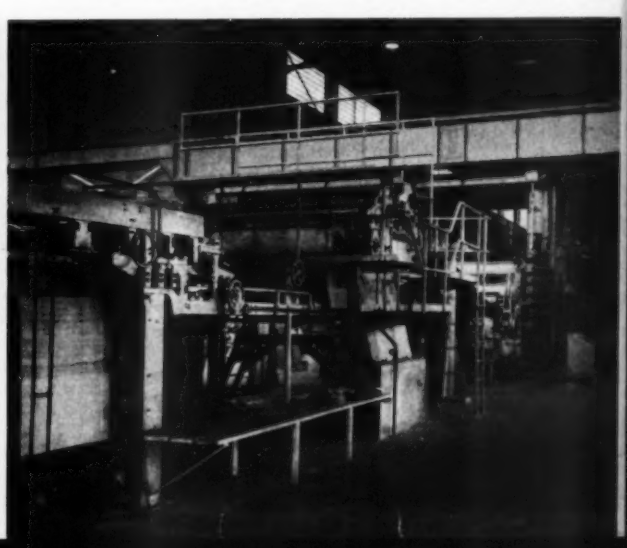


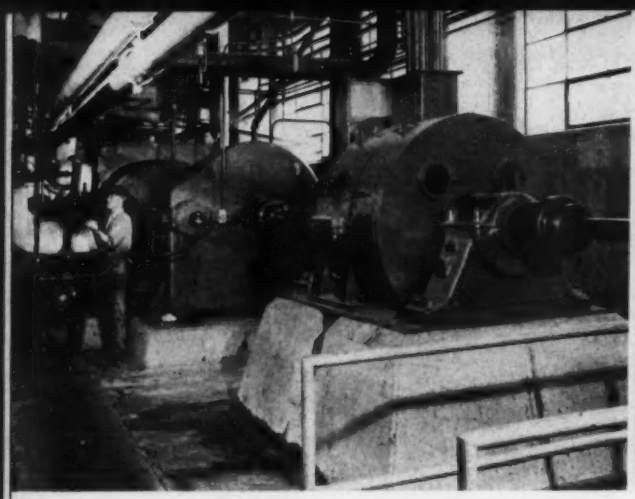
8 *Board is formed by eight-cylinder molds on this 140-in machine equipped with five suction rolls*

11 *Final finish to board is given by this open-side calender stack. Note the control panels*

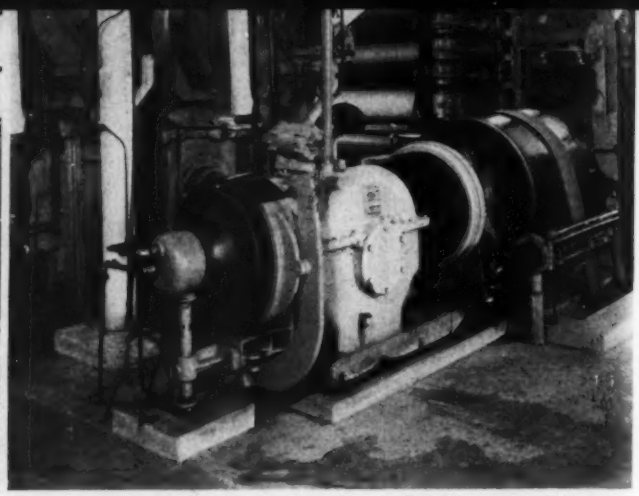
12 *Board from the finishing calender stack by-passes the reel and goes to automatic cutter and layboy*







The "Angel" is driven by a 1200-hp variable speed steam turbine; dc generator is installed on line shaft



Drive unit for one section of the paper machine. Note air-operated clutch and brake arrangement

Cylinder Board Machine

One of the most modern in design, the 140-in wide, eight-cylinder board machine built by the Beloit Iron Works, trims 128 inches, has an overall length of 550 ft employs 5 suction rolls, 81 paper dryers, a machine coating unit, and an automatic cutter and layboy. Driven by a 1200-hp, 10 to 1 ratio, Westinghouse steam turbine through a line shaft, the different sections of the machine are connected to a line shaft by belts operating on cone pulleys. Adjacent to the steam turbine on the line shaft is a 200-hp Westinghouse d-c generator set. This d-c current is used to drive the "helper" motors on the cylinder molds and the suction press roll motors.

Cylinder molds are 140 inches wide, 60 inches in diameter, and form the eight layers of stock that make up the sheet. Even distribution of stock in each of the vats is aided by a rotating perforated roll, and level control is governed by both slice and wing board action. Vats are also equipped with an air exhaust system to remove air from the inside of the rotating mold above the level of white water. Deckle showers trim the wet edges from the formed sheet.

Water Removal

Water is extracted from the sheet by both plain and suction press rolls. First is the drum combination press-and-suction roll equipped with a side suction roll to remove water from the top felt. This combination of two suction rolls and one top roll is followed by a plain primary press which, in turn, is followed by a primary suction press. Up to this point, the top and bottom felts, with the sheet between them, have been operated on by this applied suction and mechanical weight.

The top felt now returns from the sheet and passes back around the machine and the sheet is carried forward only by the bottom felt. The bottom felt and sheet then pass through the main suction press, and then through the reverse suction press so the bottom side of the sheet receives the smoothing influence of a plain top roll. In all, there are five suction presses extracting liquid water from the sheet and felts at the wet end of the machine. Following the suction presses is a plain press and immediately preceding the dryers is a pair of smoothing rolls to remove any felt impressions from the sheet.

The main suction drum roll and the side suction roll both discharge water through a receiving tank and gooseneck system connected to the suction side of a vacuum pump. Air and water are thus separated. Primary suction rolls, main suction roll, and the reverse suction roll, each with its separate vacuum pump, all discharge to a single air-water separator. As there is not a large volume of water at these points, these three pumps discharge into a common header system. White water is pumped to a set of two Sveen-Pederson save-alls to recover usable fiber. One of these is for filler fiber and the other for liner fiber. Clarified water is reused.

One of the features of the machine is that pressure is applied to the squeeze rolls by means of air-operated diaphragms instead of by a system of levers and weights. Gauges mounted on a panel board indicate the pressure applied to the front and back of each press roll. Manually adjusted pressure regulators are used to regulate the pressure to the desired value. This makes it possible for the machine tender to control accurately the work accomplished by each press.

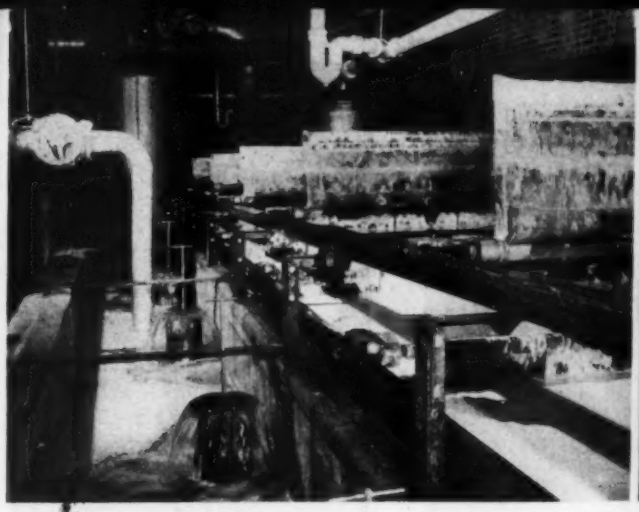
Caliper Control

The detecting device of the Harvey-Lewellen caliper control unit, previously mentioned, is located just prior to the smoothing rolls. It consists of a roller wheel running on a bottom tube roll between which the sheet passes. Variations in caliper are detected and transmitted to the controller which operates the adjustable overflow gate on the filler stock headbox. Indication is given by three signal lights. White light indicates the caliper to be correct; green light indicates low caliper; and red indicates high caliper. This constantly tells the machine tender whether or not the sheet is of the right thickness and weight. Accurate control within a half point of caliper is accomplished with this system. Accurate regulation of stock consistency makes possible this close control of caliper and corresponding weight.

Drying

Paper machine dryers of 60 inches diameter are divided into four sections with a total of 81 rolls. The first two sections, comprising 40 dryers, are fully enclosed by a Ross hood and hot air system for removing vapor evaporated from the wet sheet. The same two sections are equipped with top and bottom dryer felts and the necessary felt dryers. This practice is somewhat unusual and new for boxboard machines.

Third and fourth sections of dryers do not employ dryer felts nor do they utilize a hood system. Fans in the roof effectively exhaust the air and vapor from the two sections while hot air blowers in the basement appreciably aid the drying. A two-roll breaker stack is located in the dryer section for the purpose of improving drying and finish.



Usable fiber is recovered from white water in two tile-lined save-alls

Water filter being backwashed. Total capacity of the four filters is 3000 gpm

Calenders

After the sheet is dried it passes through calender stacks, all of the new Beloit open-side design with each roll held in separate bearings hinged to a single vertical column at the front and back of the machine. Pressure is exerted by means of an air-operated power cylinder on each of the vertical columns. This type of calender stack is easy to operate and maintain. Maintenance time is cut since any roll may be removed readily and replaced without disturbing the others. Each calender is equipped with a motor operated lift.

From the finishing calender stack, the sheet may be wound on a drum reel equipped with a pneumatic cylinder for controlling roll hardness or it may pass directly over the reel unit to the automatic cutter and layboy. When the board is wound on reels, the 6-ton jumbo rolls are transferred by an overhead crane to a Beloit rewinder, set off to one side of the reel. The winder is equipped with a special shaft puller, shaft return and roll lowering device.

Cutter and Layboy

Ordinarily, however, the sheet passes direct to the cutter. Cutter and layboy are both designed for high speed operation. The moving sheet first runs over slitters and is cut to the desired widths before passing through the double blade revolving cutter which delivers the finished individual sheets of board to receiving tapes. From the first set of tapes, the sheets are delivered to a second set of slower moving tapes. Here the sheets overlap one another and their velocity is thus reduced so that they fall readily into place on the layboy skids without being damaged. Adjustment of the overlapping on the second set of tapes by means of speed control permits maximum efficiency of layboy operation, regardless of the speed of the paper machine.

Tandem layboy units, each with separate tape delivering system, provide continuous operation with no interruptions for removing full skid loads. Guide fingers are positioned to deliver sheets from the revolving cutter to the receiving tapes for either or the layboy units.

Auxiliary Equipment

Control of tension or draws between various sections of the machine is accomplished by positioning the drive belts on the cone pulleys of the enclosed gear reduction units. But instead of the old handshift arrangement, the operator merely pushes a button to start a motor that automatically shifts the belt to attain the desired speed for each section. An air-operated diaphragm clutch is used to start and stop each section but the dryer drives require air-operated brakes for quick stopping. These are operated from individual control panels on the front side of the machine.

While speed adjustment of the various sections is accomplished by shifting the drive belts on cone pulleys, machine speed is regulated by controlling the turbine drive.

Recording controllers mounted on a control panel show the pressure of steam to each section of dryers. This is automatically controlled according to the value set on the instrument by the backtender.

Dryers are equipped with roller bearings and the dryer gears are enclosed. A Bowser pressure lubrication system is used. Over 8,000 gallons of oil is cleaned, filtered and recirculated by this system.

Heart of the automatic control system is the Ingersoll-Rand compressor that furnishes compressed air for controller operation, for applying pressure to the press rolls, and for the wide variety of uses on the paper machine.

Steam is provided by two new Springfield boilers operating at 415 psi with a design capacity of 60,000 lb of steam per hour.

These boilers are fired by Detroit Stoker Company "Rotograte" traveling grate spreader stokers. A fairly wide range of coals can be handled by this stoker equipment. Traveling grates move forward and continuously discharge ashes at the front while a series of revolving rotors feed coal from the hoppers and throw it into the furnace.

Also located in the new boiler house is the water treating plant. This consists of a large clear well and gravity sand filters furnished by Hungerford and Terry, Inc. Four filters, having a total capacity of 3000 gpm, are each 15 ft wide by 23 ft long and are installed on the operating floor of the boiler plant. The clear-well, with a capacity of over 140,000 gallons of filtered water, is located on the ground floor. Raw water from the Kalamazoo River, for the filter plant, is taken from the main mill pump which supplies water for condenser and other purposes. Water entering the filters is controlled by float valves which cut off the feed when the clear-well fills up.

Acknowledgment

Grateful acknowledgment is made to Lawrence G. Fell, president of the Michigan Carton Company, for permission to publish this article and to various members of his organization whose help and co-operation were invaluable.

Key to Safe Plants Is
Labor-Management Co-operation

R. W. CROUCHER, Safety Officer
Minnesota and Ontario Paper Co. and Subsidiaries

Max King, paper machine head oiler, proudly holds certificate showing 39 years at Mando without a lost-time accident. New certificates are issued to employees every year

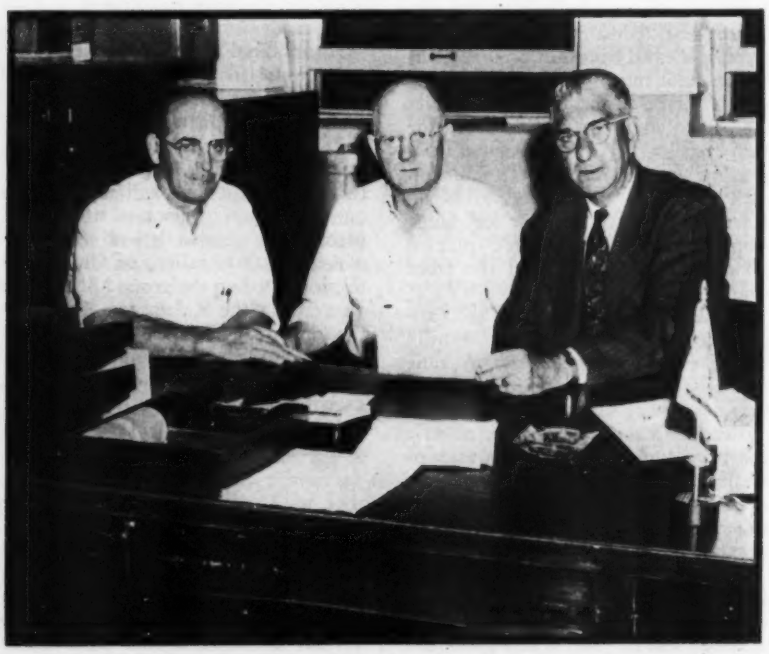
▸▸▸ OPERATIONS OF the Minnesota and Ontario Paper Company, follow the wood from American and Canadian logging operations, through processing into pulp, paper and insulating board until the finished product is delivered to railroad trunk lines over the Minnesota, Dakota and Western Railroad.

The safety program is concerned with the protection of the lives of some 4,000 workers whose activities are performed in the woods of the far north; in paper mills at International Falls, Minnesota, and Fort Frances and Kenora, Ontario; at the Insulite Mill at the Falls, and in the operation of the M.D. & W. Railroad.

Importance of this concern for safety on the part of management stems from a two-fold objective — to keep workers from getting hurt, and to minimize the heavy financial losses, both to workers and the company, of a high accident toll.

Some idea of the size of this cost may be indicated by the fact that in 1947 we had the best safety record in our history. We were able to reduce the accident toll 47 per cent on the average for our three paper mills and the Insulite Mill. Yet the direct cost of the accidents we did have was still $64,500. This included only the cost of compensation and medical care—the additional hidden costs, generally accepted as roughly four times the actual cost, must be included. This meant that, in our best safety year, the actual cost of accidents was $250,000.

Our present day safety set-up, I feel, is a gradual outgrowth of our early efforts toward improving safety consciousness. It came, whence it should come, from the men themselves. Shortly before Christmas in 1943, a worker from our Insulite Mill dropped into my office. He wanted to know if the company would be interested in setting up a joint labor-management safety committee at the Insulite Mill. The answer, of course, is obvious.



The author, R. W. Croucher (right) and his safety supervisors, M. F. Mattson (left) and Ora Hazen (center)

Personnel of the committee was important. We decided that the workers should predominate, with just enough supervisors of management men present to give careful and sincere attention to suggestions or complaints and with authority to see that they were taken care of. We decided that a dinner meeting, paid for by the company, should be held in the evening, away from the company premises and where a man's mind could be free from the routine and association of his job. Each shift of each department should be represented.

The first meeting was held on February 2, 1944, attended by 13 workers and 7 supervisors. The enthusiasm engendered there has never lagged at Insulite. The accident toll at this mill has declined steadily until in mid-July, 1948, their more than 500 workers had gone 281 days without a lost-time accident . . . one department with an almost unbelievable record of 631 safe working days.

Success of the Insulite program was electric. It started a flood of requests from other departments and other mills for similar programs. A safety committee of the maintenance and service workers of the M and O paper mill

at the Falls held their first meeting on May 10, 1945, followed a few days later, on May 24th, by the first meeting of a committee representing the Manufacturing and Converting departments of the same mill. The Wood Storage and Railroad workers soon formed a committee as well as the Fort Frances and Kenora paper mills.

All committees meet once a month under similar circumstances as the first Insulite meeting. We have never been able to improve on it. They represent open forums not only for safety recommendations and check ups but a meeting place where men and supervisors, under relaxed and pleasant circumstances, hold free and open discussion where workers can ask "How?" and "Why?" and "When?" of men who can either give them a direct answer or know where to go for it.

That our program has been successful is indicated by these comparative figures showing the reduction in accident frequency (injuries suffered per million man-hours worked) for 1947 as compared with 1946 for our three paper mills and the Insulite Mill.

Division	Accident Frequency Rates 1947	1946	Decrease (per cent)
Falls Paper	17.4	22.9	24
Insulite	14.1	28.7	51
Ft. Frances Paper	7.4	13.2	44
Kenora Paper	2.5	6.4	61
Average decrease for all mills			47.5

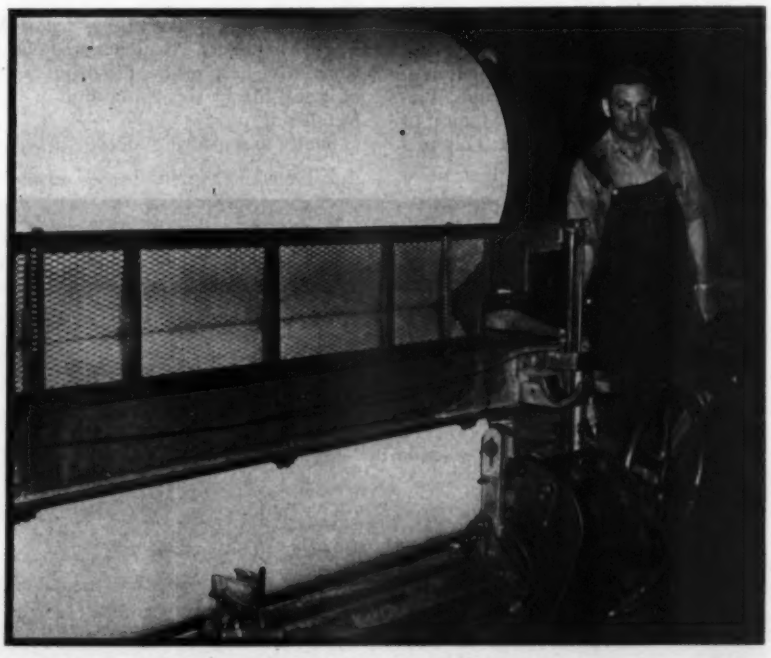
Our records show that employees 25 years of age and under continue to have the most accidents and that employees with six months service or less are more accident prone. Our company feels this indicates need for improving job training methods and steps are being taken in this direction. Twenty per cent of our accidents, the largest number of any of our groups, occur in logging operations. Next, with 18 per cent, come members of mill maintenance crews. Papermakers as a class have greatly reduced the number of accidents, notwithstanding the much larger employment figures.

More accidents occur at 10 A.M., 2 P.M. and 3 P.M. than at any other time of day. Fingers are involved in the largest number of cases with eye injuries coming next. Our goggle and spectacle program must be credited with the fact that out of 141 eye injuries in 1947, only 12 resulted in lost time. Back injuries are third largest and more than half of them result in lost time.

Importance of the continual pounding of individual safety through the work of our safety supervisors is brought home by the fact that only 14 per cent of the total accidents in 1947 were caused by faulty mechanical conditions or faulty supervision. The other 86 per cent were brought about by poor working methods by either the injured man or his co-workers. The faulty mechanical conditions and defective supervision can be remedied by direct action of management . . . the others require constant education that employees be ever aware of the hazards of mind which they carry around with them always.

In developing the safety programs, the assistance and co-operation of the Employees Mutual of Wausau, Wisconsin, has been invaluable.

Swinging cat walk on an Insulite machine demonstrated by Joe Bartkowski (lower right), safety mechanic. This operation not only makes servicing safer but saves 2½ hours every time the job is done



Joe Bartkowski, who devotes his full time to the mechanical work of properly guarding machinery, demonstrates here the operation of an air-controlled guard he devised to protect the nip on a rewinder

How To Repair Paper Mill Machinery Quicker

JOHN WAKEFIELD

▶▶▶ ALTHOUGH DESIGNED and built for dependability and long life, various parts of paper machinery *do* wear, and repairs or replacement *do* become necessary. Superintendents and engineers are constantly searching for methods to speed up repairs, to maintain operations at a high level. That is why more and more in the paper industry are investigating and turning to metallizing.

Rebuilding worn parts by spraying them with molten metal has been expanding in usefulness gradually since 1930. Today, several thousand plants of various kinds are using the method for restoring worn armature shafts, crankshafts, pistons, piston rods, pump parts, spindles, and many other mechanical elements. Many of the applications are as valuable to the paper mill superintendent as to any other industrial men concerned with maintenance.

There are several reasons why metallizing is even more valuable in the paper industry. Much equipment is large and expensive. Many parts are subjected to corrosion as well as wear. Finally, in the paper mills, wear of relatively simple parts often causes damage and great expense on other elements. For example, a worn breast roll can cause considerable damage to expensive fourdrinier wires. The opportunity for substantial savings is much greater than in industries where lighter and far less expensive equipment is in common use.

One of the most practical applications in paper mills is the restoration of worn pump parts of many kinds. Figure 1 shows a pump plunger typical of those found in many plants. This particular plunger, cast of grey iron and measuring 6 in in diameter by 19 in long, showed serious wear and scoring after two years of operation. Packing glands could no longer be kept tight.

In order to true it up, 1/16 in was machined off the surface. Then, high chrome, high carbon stainless steel was sprayed on until the plunger was approximately .020 in oversize. The surface was finished by grinding to standard size. After more than two years service, the metallized plunger showed no wear or scoring and the original packing was still in the glands.

Today, of course, many mills are turning away from reciprocating pumps and adopting centrifugals. Here again, metallizing has a definite value. Frequently impeller hubs and wear rings lose their proper clearance through erosion and scoring, reducing the efficiency of the unit. While wear rings are often of relatively light section, they usually have ample metal across the wearing surface to permit reboring for several reworkings of the pump. Rings can be trued up in the lathe until a proper surface is restored. This, of course, leaves undersize hubs.

Procedure is to metallize the impeller hub so that it can be refinished to the new ring size. This is quite a simple matter, since modern metallizing guns spray bronze very rapidly. Numerous cases have been reported where impellers, badly scored and worn, have been restored to many years of useful life by this application of the metallizing process.

Shafts and packing sleeves of centrifugal pumps are also subjected to considerable wear. Figure 2 illustrates the metallizing of just such a worn area. In this particular case, the surface is being sprayed with steel. Other cases have been reported where stainless steel has been applied directly over the original bronze sleeve or stainless steel sleeve. On one case in particular, 4 in by 14 in bronze sleeves were rebuilt with stainless steel at a cost of only $8.00 per sleeve. New bronze sleeves were priced at $44 and stainless steel sleeves at $169 each.

It is in the field of rolls that metallizing offers its greatest possibilities to the paper mill superintendent. Couch roll, breast rolls, beater rolls, and jordan plug journals are among the many successful uses reported for the process. In one case, a mill in Massachusetts required a beater roll, on which the journals were badly worn, by 8 o'clock one morning. Notified at 5:30 the afternoon before, the machine shop trued up the journals, prepared them for metallizing by cutting a 14 thread, .025 in deep with a square-nosed tool. Threads were then knurled with a special knurling tool. Journals were metallized with .10 carbon steel, finish machined and the roll was ready for use four hours before the required time.

Figure 3 is an even more impressive metallizing job. Shown is a steel center, bronze-covered vacuum seal roll. This roll, one of nine used in the plant, was supported at both ends by large sleeve type antifriction bearings, which frequently came loose and allowed the journals to rotate in the sleeves. Replacement of journals was estimated at

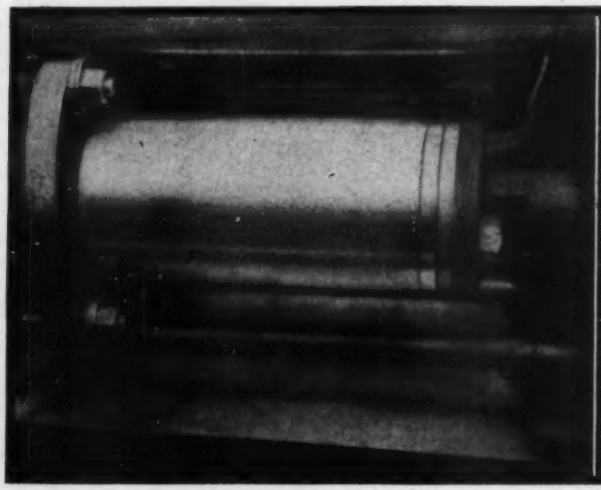


Figure 1

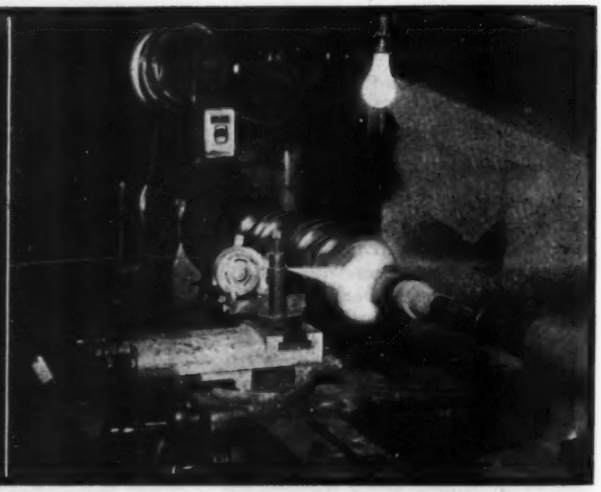


Figure 2

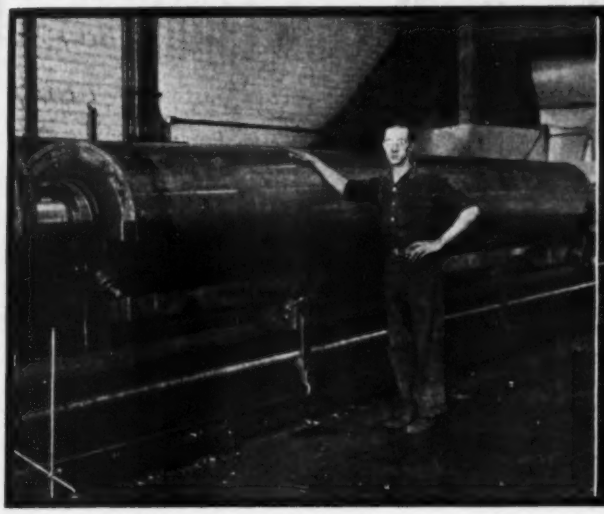


Figure 3

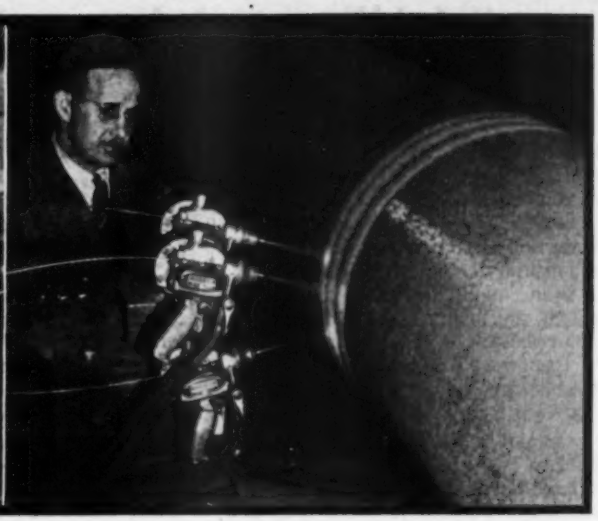


Figure 4

about $2,200 per roll. Damaged parts of the journals were prepared, metallized with .25 carbon steel and machined to size. Cost of metallizing one journal, including all materials, preparation, spraying, and finishing amounted to about $60 according to the mill superintendent. This, of course, did not include the removal of the roll, transportation to the machine shop, and re-assembly. Even with these costs added, total cost was less than 10 per cent of the most of replacement.

Even more substantial savings can be made in the resurfacing of roll bodies themselves. Detailed report of work on a breast roll might serve to illustrate this field for metallizing to the best advantage. Figure 4 shows the actual metallizing of this 22-inch diameter roll, using three metal spraying guns simultaneously.

The breast roll illustrated was made of a heavy cast bronze shell, about 5/32 in thick. Weighing around 3,800 pounds, this roll cost new around $2100. As the breast roll was driven by the fourdrinier wire, it had a tendency to slip and, in wearing out, to form surface ridges. These in turn tended to shorten the life of the fourdrinier wire itself.

The worn roll was set up in the lathe and a light cut, using a coarse feed, was taken over the entire surface, leaving a sort of fine thread. Then, the electrical method of preparation was used. This consists of depositing a very irregular surface of a special nickel type electrode, using a unit similar to a welding generator but with different current characteristics. Such units are available from manufacturers of metallizing equipment. Some care must be employed to be sure that the nickel deposit covers at least 95 per cent of the surface.

Prepared surface was sprayed with high chrome, high carbon stainless steel to a thickness of approximately 3/16 in on the radius. Finishing was done by first roughing down with a cemented carbide tool bit and then for final finish, a grinder was set up. Total cost of the work was $1,051 as against replacement cost of $2,100. Careful monthly inspection for the first few months has shown no wear whatsoever and it is now the superintendent's opinion that it will operate for at least five years without regrinding. Thus, the cost of several regrindings ordinarily needed will be saved in addition to the saving in the repair operation itself.

These, then, are some of the typical jobs which are being done with metallizing in the paper mills today. They should serve to indicate the value of the process and suggest many other applications, of similar importance. Perhaps the advantages of metallizing already suggested in discussing these applications could be summed up separately for clarity.

There appear to be three main advantages on work of this kind. First is the speed of modern metallizing guns. For example, stainless steels can be sprayed using 3/16 in diameter wire, at better than 20 pounds an hour. Compare this with the average deposit time of welding and the advantage of metallizing becomes immediately obvious.

The second advantage is the low cost of metallizing, partly at least, a result of its speed. The saving in metal is the other contributing factor in cost considerations. By the application of about two pounds of stainless steel, in the case of the bronze packing sleeves, many pounds of bronze were saved on each sleeve. In the case of the breast roll, it took 572 pounds of sprayed stainless steel to save a 3,800-pound roll.

Third advantage in metallizing is its great versatility. Any metal in wire form can be sprayed. Today, more than 30 different kinds of metal are in common use. Most valuable to the paper mills, of course, are the stainless steels and bronzes, since so many parts must resist corrosion as well as wear.

Finally, a word or two concerning important factors to be observed in metallizing may be in order. There are three types of jobs which should never be attempted with metallizing. First, sprayed metals will not stand direct impact such as would be encountered on the valve seats of internal combustion engines or on some kinds of cam surfaces. Second, they will not stand the strain to which threads and gear teeth are subjected. Don't try to metallize them. Finally, metallized coatings will not stand the tendency to elongate when used directly under balls or rollers. Hence, they should never be used on ball or roller bearing races.

A second consideration of major importance is the selection of a method of preparation and a metal which are suitable for the work involved. Manufacturers of metallizing equipment publish excellent handbooks on the recommended methods of preparation, metals, spraying technique and the like.

With the limitations and advantages of metallizing clearly in mind, one is free to investigate the possibilities for mechanical maintenance. In these days of continued metals shortages, and the tightening up of money for new equipment and replacements, this fast, low-cost "putting-on" process well may prove a life-saver to the hard-pressed superintendent and maintenance engineer.

Solubility and Extraction Studies of Lignin

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▶▶▶ THE LITERATURE today contains no suggestion as to the number of components in the complex we call lignin. This generalization applies to both isolated lignin preparations and the natural lignin in the various plants. It is an enigma, in retrospect, why research on lignin was conducted for approximately a century before investigators began seriously to question the homogeneity of the lignin materials with which they worked.

Opinion is divided on the homogeneity of lignin, even today, as indicated by the large number of reports, the major purpose of which is to derive a constitutional formula, and the relatively few concerned with the separation and characterization of the components of the lignin complex. While inferential evidence questioning the homogeneity of lignin preparations is almost as old as our knowledge of lignin, it is only within about the last decade that reports have appeared which resulted from attempts to study homogeneity.

The long delay in attacking the problem of heterogeneity has been caused, among other things, by an insufficiently broad and critical outlook, the refractory nature of the material itself, inadequate technics, absence of sufficiently powerful research tools, and awareness and avoidance of an exceedingly difficult chemical problem resulting in staff and equipment incommensurate with the magnitude of the task. Lignin chemistry has been somewhat handicapped by the general, and too frequently the exclusive use of the standard technics of the laboratory of organic chemistry, neglecting valuable analytical tools of the biochemist and physical chemist. For example, it has been a common practice in the past to purify lignin preparations by such standard organic technics as repeated solution and precipitation, and without insisting upon the application of the most discerning and critical tests of purity, to assume that the end product of the purification technic was pure or substantially so.

The usual criteria of purity such as melting point, constancy of elementary composition, etc., were rarely useful since melting points were not sharp nor could the preparations be crystallized, while small variations in elementary composition were not considered too important in a material of high molecular weight the natural origin of which inevitably led to some variation depending upon the source.

In the last decade or so, more powerful tools have appeared, chiefly those of physical chemistry, as well as extremely discerning preparative and analytical technics developed in biochemistry. Of these newer tools and technics available today, only a portion have been applied to the investigation of lignin. It seems probable that more progress can be expected from the new tools and technics than the old.

Previous Attempts at Separation

With the customary superiority of hindsight over foresight, it is possible, in the light of the present evidence of heterogeneity, to reinterpret some of the older experimental reports on lignin to conclude that data suggesting heterogeneity have been known for at least several decades. Typical of such evidence, is the partial solubilitiy of sulphuric acid lignin in organic solvents, the differences in Klason's *alpha* and *beta* lignosulphonic acids, the variation in elementary composition of different preparations, and variations in molecular weight. It may be contended that some of this evidence may indicate merely polymerism, rather than diverse chemical species, but the difference is largely one of point of view and neither adds nor detracts from the question of heterogeneity and the number of components present, whether the difference in their character be physical or chemical. All such discussions and data have as their ultimate purpose a more accurate knowledge of reaction products, the parent material, and the constitutional structures involved.

The thirty-odd important papers which have appeared in about the last decade, in which the heterogeneity of lignin has been investigated, have employed various phenomena, effecting only partial separation in each case. The largest number of reports (six) described procedures for the fractional digestion of wood with reaction solvents, which may be regarded as fractional solution processes.

These papers reported, in general, small differences in the analytical constants such as methoxyl, sulfur content, and ultra-violet absorption, but provided no basis for inferring the number of components present, the chemical species present, nor a means of isolating pure components. Five reports described fractional precipitation by organic and inorganic reactants. These fractions showed small variations in analytical constants but gave no evidence of the number of components or the chemical species present. Dialysis was employed in five reports, fractional precipitation by the addition of an inert organic solvent in four, diffusion in four, adsorption in three, partition between two immiscible solvents in two, molecular distillation in two, and electrophoresis, extraction of lignin from wood with an inert solvent, and extraction of isolated lignin with inert solvents in one report each. Results were similar in all: small variations in the analytical constants of the fractions without evidence as to the number of components or chemical species present.

Previous Solubility and Extraction Studies of Lignin

The extent of solubility of lignin by continuous extraction with boiling solvents, reported in 1940 (*2*), was erratic, varying with the particular preparation, the solvent, and particle size. In addition, some samples continued to be dissolved or dispersed by the solvent after approximately 300 hours of extraction. The present study was prompted by this anomalous behavior and by the continuing importance of lignin purity or heterogeneity. Additional methods of studying solubility have been employed to extend the limits of knowledge of the solubility behavior of lignin.

Application of Gibbs' Phase Rule to Solubility

The application of Gibbs' phase rule to solubility as an index of purity of the solid has been ably discussed by Kunitz and Northrop (*4*), and Herriot (*3*). *Webb* (*6*) has recently presented a more general discussion of the relationship of solubility to purity, and the application of the phase rule in practical analytical procedures. Briefly, Gibbs' phase rule states that the number of phases plus the number of degrees of freedom equals the number of components plus two, or $P + F = C + 2$. Since the temperature and pressure are held constant during the determination of solubility, this theory states that in a system consisting of N components and N or more phases the composition of the phases is fixed and cannot be varied by changing the quantity of the phases present. The solubility of a solid phase of one

component is, therefore, independent of the quantity of solid phase present but if the system consists of N + 1 components and N phases, the amount of solid in solution will vary with the quantity of solid phase present.

To apply the phase rule to solubility data, the solubility of the substance is measured in the presence of varying quantities of the solid phase. This is accomplished by stirring varying quantities of the substance with a constant volume of solvent until equilibrium is attained. The concentration of the dissolved substance is then determined and plotted against the concentration of the total substance.

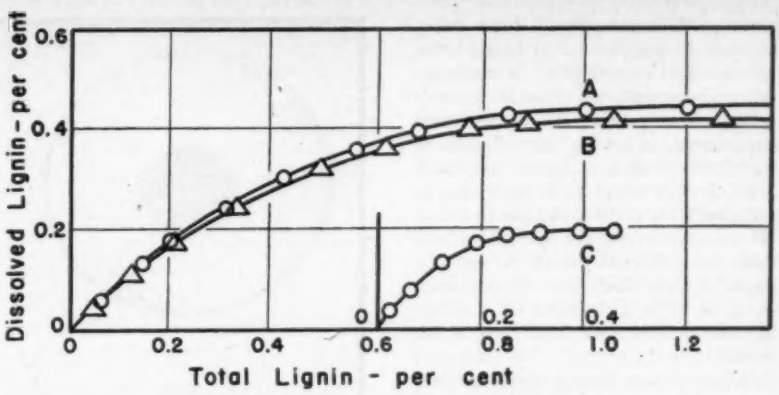

Fig. 1—Solubility of aspen lignin in methanol and acetone

Experimental Determination of the Solubility of Lignin

Samples of the identical lignin preparation previously reported (*2*) to undergo anomalous solubility were used in these experiments. These were prepared from aspen (*Populus tremuloides,* Michaux) by digesting one hundred grams of wood in a liquor consisting of one liter of water and one liter of *n*-butanol made two per cent in sodium hydroxide, for four hours at 160 C. After digestion the lignin was separated from the digestion liquor as described previously (*1*). The solubility of the lignin samples was determined in both acetone and methanol at 25 deg. C. ± 0.2 deg. by shaking weighed quantities of lignin in a constant volume of solvent until equilibrium was attained. The amount of lignin in solution was determined by weighing the dry residue from a weighed quantity of solution.

Results of Solubility Determinations

The experimental values obtained in these solubility determinations are shown graphically in Figure 1 in which the concentration of dissolved lignin is plotted against the concentration of the total lignin present. Curve A represents the solubility in methanol, Curve B in acetone.

The mathematical method of Kunitz and Northrop (*4*) for the analysis of a multicomponent system can not be applied to these data for the lack of straight portions of the curve. The use of a second solvent producing a similar curve largely rules out the possibility of the presence of a solid solution while the shape of the curve suggests that multicomponents, rather than a simple system including perhaps two or three components, are present. In an attempt to determine whether the lignin was a solid solution or a mixture, with greater certainty than from the shapes of the solubility curves alone, lignin solutions were shaken at 40 degrees to equilibrium, filtered, and allowed to cool. The first solid phase to appear was separated and its solubility determined at 25 degrees in methanol. The results are shown in Figure 1, curve C. Theory predicts that the solubility would be less than that of the total lignin as was found; that the curve is somewhat straightened is apparent; still, it is not an ideal curve nor is it as decisive as some curves reported in the application of the phase rule to experimentally determined solubilities of proteins. If one interprets curve C as indicative of a pure compound, then the original lignin was a mixture. If one interprets curve C as indicative of a solid solution, the original substance was a solid solution. In either case, the original would appear to contain at least two components.

Selective Extraction of Lignin

Extraction of solids with liquid in the conventional Soxhlet apparatus provides no visible index of whether fractionation or merely solution is occurring. The difference in the analytical constants of the solid in the solute and the residue is slight and yields, at best, dubious data from which to judge whether fractionation has occurred and the number of components extracted. To provide a ready visual answer as to whether or not selective extraction was occurring in the extraction of lignin with solvents, the following technic was employed:

(1) A 175 mm square of Whatman No. 1 filter paper was prewashed with the solvent to be used in extraction, by supporting the paper on a watch glass of slightly smaller diameter, applying the solvent dropwise in the center and allowing capillary action to carry the solvent to the edges of the paper. It was usually desirable to place another watch glass over the paper to prevent evaporation, and to place a small ball of cotton in the center of the filter paper to serve as a reservoir, thus requiring less attention. Cotton thus employed was prewashed by placing on a filter paper, saturating with the solvent repeatedly, and then handled with forceps to avoid contamination. After the solvent reached the edges of the paper, the sheet was hung up in air to dry.

(2) A drop or two of a solution of lignin in 1,4-dioxane (or other solvent such as pyridine, glacial acetic acid, etc., which must dissolve the lignin preparation *completely*) was deposited in the center of the paper and allowed to dry. The concentration of the lignin in the dioxane was not critical (4 to 5 per cent was used in these experiments) but it should not be so great that evaporation of the solvent and deposition of the lignin will cause the lignin residue to plug the capillary structure of the paper. The sheet was again thoroughly air-dried.

(3) The paper with the dried spot was placed on the watch glass, and the particular solvent which was selected was added dropwise on the center of the lignin spot. After the liquid front had advanced a cm or two by capillarity, a small prewashed cotton ball was rested on the center of the lignin spot as a reservoir for the solvent to reduce the attention required. A watch glass inverted over the paper reduced evaporation, as did also the pouring of solvent into the bottom of the lower watch glass. It was essential to keep the capillary action continuous as drying or even too rapid evaporation caused spurious rings. Just before the liquid front reached the ring left by prewashing, the sheet was removed and air-dried.

To avoid spurious effects from soluble materials in the filter paper, it was essential to wash the paper in the solvent to be used. The filter paper invariably gave rise to rings which fluoresced in ultraviolet light when water or organic solvent was used

alone, without any spot of lignin being present. In practice it was found to be accurate and expedient to prewash the paper by capillarity, exactly as if a sample were present in an extraction experiment, allowing the liquid to travel outside of the edges of the watch glass. It was found to be necessary to carry out this prewashing treatment in all cases to remove the spurious effects from the materials dissolved from the paper. Paper which was air dry, oven dried at 100 C., and over calcium chloride, showed no difference in behavior.

When it was desired to make comparisons between spots extracted by different solvents or spots of different lignin preparations, it was found necessary to standardize both the lignin content of the solution used to form the spot and the size of the spot. Extraction patterns could then be duplicated and rough comparisons made as to behavior, etc. The rate of addition of the solvent to the cotton ball influenced the duplication of extraction patterns.

The most desirable practice appeared to be to add the solvent slowly and at a uniform rate to the cotton ball. A satisfactory rate of solvent addition was found to be that which caused butanol to spread by capillarity on Whatman No. 1 paper to a circle 55 mm in diameter approximately 7 minutes. The rate of spreading (and hence addition) varied greatly with the solvent, those of low boiling point usually being very rapid, while other properties such as surface tension, viscosity, etc., probably had an influence.

The method of Rutter (5) employing small strips cut from the circumference to the center of the paper, which dipped in a container of solvent below were useful in controlling the rate of solvent addition. Various methods utilizing wicks on the uncut paper and feeding the solvent from below by capillarity ascent were also employed but the cotton ball method was quite satisfatcory.

Examination of the extraction patterns was most revealing when performed alternately in daylight and ultraviolet light throughout the entire formation of the pattern. In this way, fluorescence was observed easily and compared with the appearance in daylight. It was also profitable to observe the pattern while drying, as some fluorescence disappeared when dry. It was frequently informative to examine the pattern in ultraviolet light from the reverse side as if with "transmitted" light, as well as from the frontside by the incident light. Extraction patterns which had been dried could be examined for fluorescence in the presence of the solvent by lightly spraying a portion of the pattern with the solvent

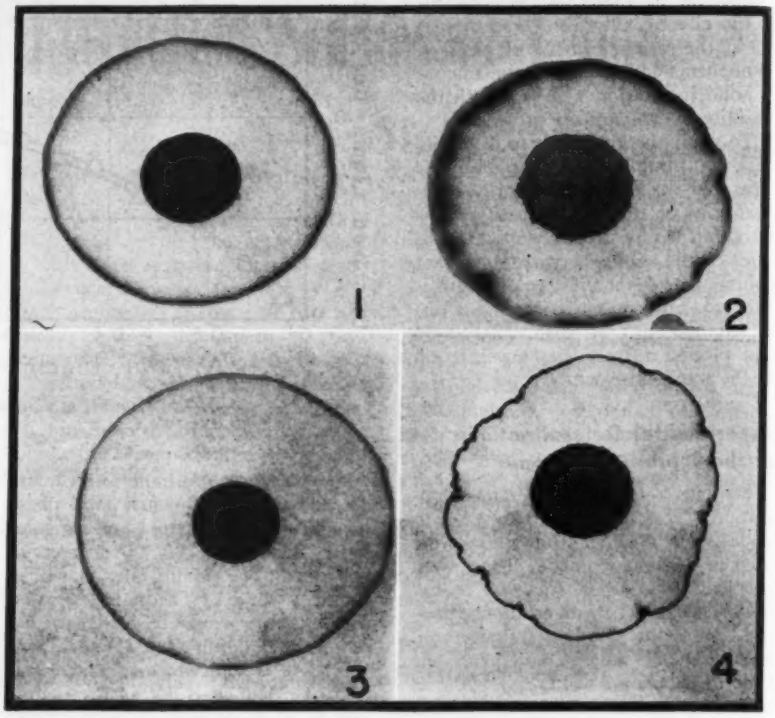

Fig. 2—Extraction patterns of lignin after selective extraction with solvents. No. 1—Lignin A extracted with butanol. No. 2—Lignin B with tetrahydrofurane. No. 3—Lignin C with butanol. No. 4—Lignin D with pyridine

used. This practice caused little diffusion and migration of the zones.

The source of ultraviolet light used in these experiments was a Hanovia high pressure electronic discharge quartz mercury arc, No. S 353 with filter No. Sc 5032 transmitting radiations largely at a wavelength of 3660 A. U.

Solvents and Lignin Preparations Employed

The following thirty-one solvents were used as extractants on each of the lignin preparations as well as mixtures of some of them:

Aqueous: water, phosphate buffer, *p*H 10.6, ammonium hydroxide, 2.8 per cent

Alcohol: methanol, ethanol, *n*-butanol, benzyl alcohol, 2-ethylhexanediol-1,3

Aldehyde: formaldehyde 35.3 per cent, benzaldehyde, cinnamyl aldehyde, furfural

Acid: glacial acetic acid

Ether: diethyl ether, dioxane, tetrahydrofurane

Ketone: acetone, isobutyl methyl ketone, isophorone

Ester: butyl acetate

Amine: triamylamine aniline, pyridine, quinoline

Nitro: nitrobenzene

Amino-alcohol: ethanolamine, triethanolamine, 2-amino-1-butanol

Ether-amine: morpholine

Ether-alcohol: phenyl cellosolve, benzyl cellosolve

The following lignin preparations dissolved in a solvent which dissolved the preparation completely were extracted according to the procedure above:

Lignin A. Aspen lignin prepared in alkaline water and butanol, employed above in the application of the phase rule to solubilitiy and previously reported (2). Dissolved in 1,4 dioxane.

Lignin B. Western hemlock (*Tsuga heterophylla, Sarg.*) lignin prepared by digesting 40 mesh wood meal in equal volumes of water and *n*-butanol, the entire solution made 2 per cent in sodium hydroxide. The meal was extracted with fresh portions of liquor until the lignin remaining in the wood was less than 1 per cent. The digestion liquors were combined, the butanol distilled off under 15 mm pressure, the distilland filtered, and precipitated with hydrochloric acid. The precipitate was filtered and washed with distilled water until the wash water gave a negative test for chloride, and air-dried. The dry lignin was dissolved in dioxane.

Lignin C. A commercial alkali lignin (Meadol) from mixed hardwoods. Dissolved in dioxane.

Lignin D. A commercial sulphite waste liquor from western hemlock, evapor-

Table I — Appearance of Lignin A After Extraction

Solvent	Fraction	UV, Wet	UV, Dry	Visible, Dry
Butanol	Cen. spot	Same color, weakly fluorescent	Same	Light brown
	Outer ring	Tan, fluorescent	Dark brown, non-fluorescent	Medium brown
Acetone	Cen. spot	Bright yellowish-white fluorescence	Faint yellowish-white fluorescence	Faint tan
	Outer ring	Dark brown, non-fluorescent	Dark brown, non-fluorescent	Medium dark brown
Tetrahydrofurane	Very similar in all respects to that with acetone.			

ated under vacuum. Dissolved in distilled water.

Results of Solvent Extraction of Lignin

All of the lignin preparations examined underwent selective extraction into soluble and insoluble portions in more than one solvent. All of the lignin preparations exhibited from complete solubility in more than one solvent to complete insolubility in more than one solvent in this list of solvents. The following summary lists the solvents which effected the most clear-cut selective extractions:

Lignin A: butanol, acetone, and tetrahydrofurane

Lignin B: butanol, acetone, tetrahydrofurane, formaldehyde 35.3 per cent, and ammonium hydroxide 2.8 per cent

Lignin C: butanol, formaldehyde 35.3 per cent, and ammonium hydroxide 2.8 per cent.

Lignin D: pyridine, formaldehyde 35.3 per cent, and ammonium hydroxide 2.8 per cent

Examples of this seletcive separation on the basis of differential solubility are shown in Figure 2.

As a test of difference between soluble and insoluble portions of the lignin preparations, fluorescence and diffusion rates were compared.

The appearance of Lignin A is summarized in Table 1 as a typical of the behavior of these lignin preparations.

Diffusion rates were compared for a number of the lignin portions remaining in the center spots with those portions which had migrated to the corresponding outer rings under the influence of extraction. The diffusion rates of the separate portions of Lignin A extracted with butanol were generally representative. The dried filter papers from several such extractions were cut with scissors to separate the central spot from the outer ring, and each extracted dropwise with dioxane by capillarity. The dioxane solutions of these lignin portions were then placed in capillaries 2 mm in diameter under a solution of dioxane with a fine pipet and allowed to diffuse at 25 deg. C. ± 0.2 deg. After seven days the boundary of the lignin solution from the central spot had advanced 11 mm while that from the outer ring had advanced 19 mm. The corresponding values for Lignin B (also butanol solvent) were 9 and 18 mm.

Discussion

The separation of all of these lignin preparations into soluble and insoluble portions and their differing fluorescence and diffusion rates suggests that all are mixtures rather than pure substances. In view of the special conditions obtaining in this type of extratcion, certain problems remain to be overcome before this sheet method can be employed to effect the large scale separation of lignin for further study although the applications on a micro-analytical scale are obviously very numerous. The spreading of lignin into fine films or particles on fiber surfaces presents a condition which is not met in the usual solvent extraction with larger particle size, channeling, the effects of a higher temperature, dispersion, longer time of exposure, etc. These experiments would seem to emphasize the importance of further study of the heterogeneity of lignin preparations and methods for separating the lignin complex into its component parts for constitutional studies.

These experiments add to presently available evidence achieved by diverse means that the lignin preparations usually studied in the laboratory are complex mixtures not suitable for constitutional studies.

Present evidence indicates that much more must be known of the components of the lignin complex before constitutional interpretations can be made which will withstand the erosive effects of further thought, experiments, and practical experience.

Present evidence, by independent methods and laboratories, suggesting heterogeneity by variable analytical constants of fractions and differing behavior of separate portions do not build confidence in the presently proposed structural formulas, particularly when one considers other materials of parallel natural origin such as tannins, resins, essential oils, etc. These are frequently exceedingly diverse in the plant itself while the extracting process usually is a source of further change.

From the standpoint of present evidence and logic alone, the burden of searching and exacting proof of homogeneity would appear to rest upon each investigator who proposes a structural formula for an experimental lignin preparation. The methods employed in this study should supplement those already available and simplify such a search for evidence of heterogeneity or homogeneity of isolated lignin preparations.

The above methods of solubility and extraction have not been previously applied to lignin chemistry. They provide additional analytical criteria, generally comparable to melting points and similar constants as an index of purity, to a material which is denied such constants by its physical state.

These experiments indicate that two portions can be isolated from common lignin materials, but like other methods before them, still do not reveal the total number of components (beyond two) which may be present in a given lignin preparation. Perhaps the most significant contribution of these experiments is the discovery that lignin can be separated into two portions with different properties on a piece of paper in a few minutes. The availability of such a method as a new test of purity, and as a means of separating the two portions for further study should find wide application in all constitutional studies and in analytical experiments dealing with lignin purity and heterogeneity.

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Power System Expanded

at Hammermill Paper Co.

M. N. HALBERG[1] and G. L. HAWKINS[2]

▶▶▶ THE PROBLEM OF expanding its generating facilities to take care of a planned increase in plant load recently confronted the Hammermill Paper Company (Erie, Pa.).

This company generates all of its electric power, and the increase in load indicated that another turbine generator rated 9375 kv-a, 7500 kw should be added to the system. Although all existing power was being generated at 2400 volts, careful studies indicated that the new generator and any future generators should operate at 13.8 kv.

The existing generating equipment and main power distribution switchgear are shown in Figure 1. The generators, all turbine driven, consisted of three 2670 kv-a, 0.75 pf units, one 5714 kv-a, 0.7 pf machine and one 6250 kv-a, 0.8 pf unit. All generators were connected to a common bus and power was fed from this bus to the various parts of the plant through 16 feeder breakers. The switchgear consisted of cell-type breakers having an interrupting capacity of 100 mv-a. An auxiliary bus, disconnect switches, and bus tie circuit, arranged as shown in Figure 1, allowed the removal of any feeder breaker for inspection or maintenance without interruption of service. The short-circuit current on this system was considerably in excess of the interrupting capacity of the breakers, so that changes in the system were necessary even though no additional generating capacity were to be added.

The new power system is shown in Figure 2. To bring the short-circuit current down to the capacity of the existing breakers, the main distribution bus was split into four sections. A 2670 kv-a generator was directly connected to each of two sections, and the 5714 kv-a generator was connected to the other two sections through a duplex reactor. A new synchronizing bus was provided, and each pair of distribution bus sections was connected to the synchronizing bus through a duplex reactor. The remaining 2670 kv-a generator was connected to the synchronizing bus through a single reactor. A new 2400 volt generator and feeder bus was also provided, to which was connected the 6250 k-va generator and the synchronizing bus with a reactor in both circuits. All the circuit breakers on the new bus are of modern metal-clad construction and have an interrupting capacity of 150 mv-a.

The new 9375 k-va, 13.8 kv generator was connected to the synchronizing bus through a three-phase transformer rated 6000 kv-a (8000 kv-a with fans). Two 13.8 kv feeders are provided to supply power to new 13.2

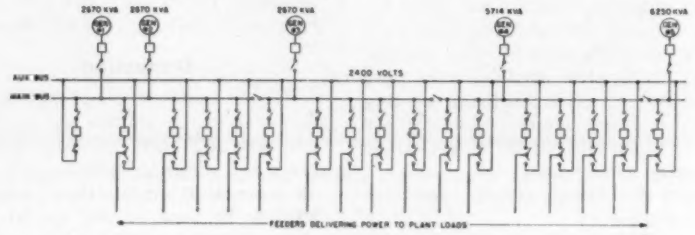

FIG 1-OLD POWER SYSTEM

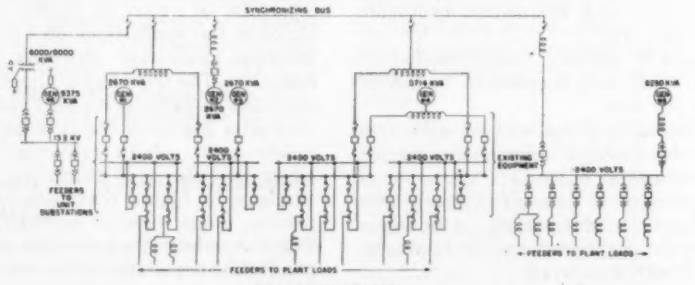

FIG 2-NEW POWER SYSTEM

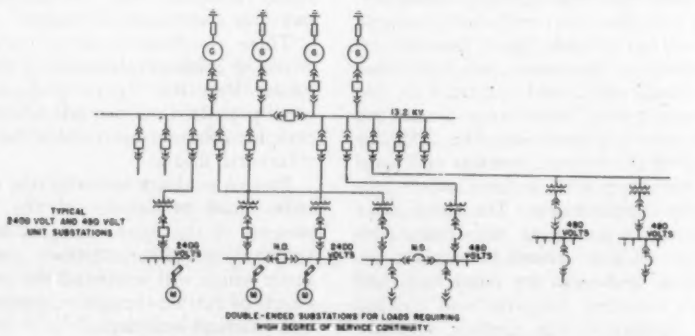
13.2 KV
TYPICAL 2400 VOLT AND 480 VOLT UNIT SUBSTATIONS
2400 VOLTS
480 VOLTS
N.O.
DOUBLE-ENDED SUBSTATIONS FOR LOADS REQUIRING HIGH DEGREE OF SERVICE CONTINUITY

FIG 3-FUTURE DEVELOPMENT OF POWER SYSTEM

(1) Industrial Power Division, Industrial Engineering Divisions, General Electric Co., Schenectady, N.Y. (2) Engineer, Hammermill Paper Co., Erie, Pa.

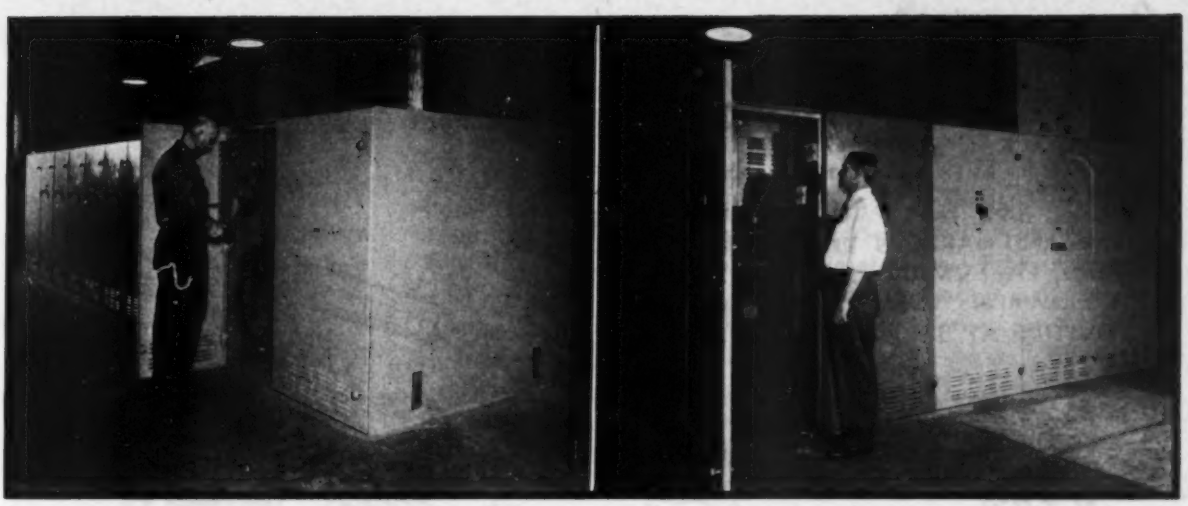

Fig. 4 (left)—The new 2400-v, 150-mva metal clad switchgear . . . Fig. 5 (right)—The 13.8-kv, 500-mva metal-clad switchgear

kv/480 volt unit-substations. All 13.8 kv breakers have an interrupting capacity of 500 mv-a. Both the neutral of the 9375 kv-a generator and the neutral of the 6000 kv-a transformer are grounded through resistors. This insures that there will be a ground on the 13.8 kv system even though the generator or the transformer is out of service.

The arrangement provided allows all existing breakers to be used with the short-circuit current brought down to their interrupting rating. The existing auxiliary bus was retained and utilized to allow inspection of any feeder breaker without de-energizing the feeder. No changes were required in the existing power utilization equipment, i.e., motors are supplied with power at the same voltages (2300 or 440 volts) as before. Finally, the system is designed so that future expansion can be made simply and economically. Any additional generators required will be rated 13.8 kv. Similarly, as the old generators are retired through absolescence or wear, they will be replaced by 13.8 kv units. Thus, eventually all generators may be rated 13.8 kv and the power system would then simplify to that shown in Fig. 3. At 13.8 kv, generator capacity totaling at least 40,000 kv-a can be connected directly to the bus without exceeding the interrupting rating of the circuit breakers employed.

The basic factor underlying the decision to change from 2400 volts to 13.8 kv as the new generated voltage in this plant was the substantially higher kv-a interrupting and momentary rating available at the higher voltage in circuit breakers of comparable cost. This meant that the new generator, together with any future generators which might be required for the ultimate expansion of this plant, can be connected directly to a common bus without the use of any generator or synchronizing bus reactors. Similarly, no reactors are required in the feeders. In addition to eliminating the cost and space required for reactors, it means that fewer breakers are required, the switching is simplified, and two or more feeders can be operated in parallel without danger of excessive circulating current. Another important factor is that the circuit breakers available have the same maximum continuous current carrying capacity at 13.8 kv as at 2400 volts. Thus, the maximum size of individual generator which can be connected to the bus through a single breaker is nearly six times as great at 13.8 kv as at 2400 volts. At 13.8 kv, the turbine size can be selected for maximum overall economy with no switchgear limitations, while at 2400 volts the maximum standard size would be 7500 kv-a. Finally, with a 13.8 kv system, the feeder and generator cables are less costly because of their lower current carrying capacity and better voltage conditions are maintained throughout the plant.

It is true that with generation at 13.8 kv, transformers will be required to supply the 2300-volt motor load as well as the 440-volt load. However, the cost of the additional transformer capacity required is essentially offset by the saving in other equipment as outlined above. Furthermore, in the ultimate system where the 2300 volt load is supplied entirely by transformer substations, the short-circuit duty on the 2400 volt feeder breakers and on the motor starters will be substantiailly reduced. The fact that all power is being transformed, so that it can be delivered to the load at 440 volts as economically as at 2300 volts, offers the possibility of additional savings in motors and control. In the past, 2300 volts has been used for all motors rated 40 hp and larger and 440 volts for the smaller motors. With the new system, it will be economical to use 440 volt motors in sizes up to about 200 hp, with a substantial saving in cost of motors and motor starters.

The new power system has been in successful operation for several months and its performance to date has been excellent.

Fig. 6—The 9735-kva, 13.8-kv turbine-generator

Paper SKETCHES . . . . . .

IN ORDER TO TAKE CARE OF THEIR FARMS AND GARDENS DURING THE DAYLIGHT HOURS, PAPERMAKERS OF OLD HOLLAND — IN THE SUMMER — STARTED THEIR PAPERMAKING ACTIVITIES AT 3:30 A.M. AND QUIT AT 10 A.M.

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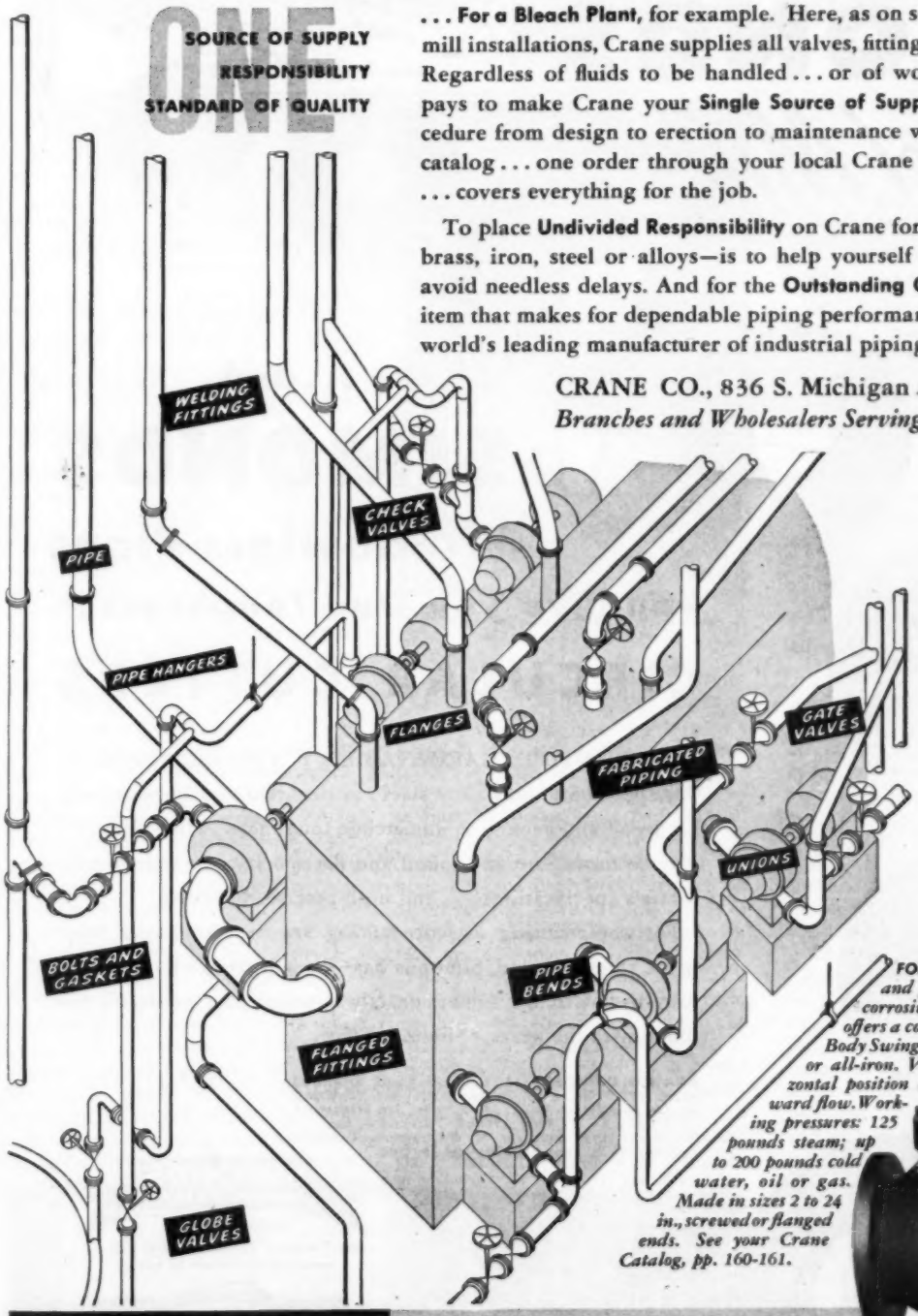

Piping to seal chest in multi-stage bleach plant; Crane supplies all piping equipment.

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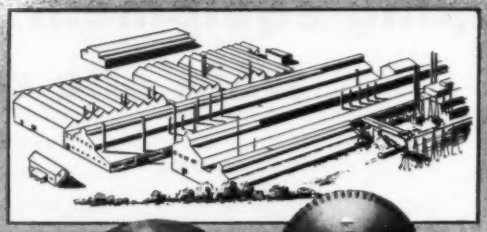

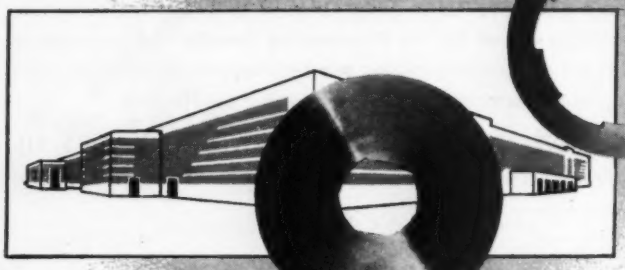

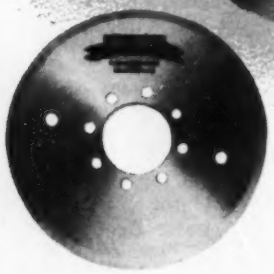

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"Make Safety a Science" Keynote of *36th National Safety Congress*

▶▶▶ A BATTLE CRY WAS sounded at the opening of the 36th National Safety Congress held in Chicago the week of October 18, that should and must resound and re-echo to every part of the nation. The American people have been challenged to treat accident prevention as a science—to fight this great destroyer of human life and happiness with all of the intelligence given to man and with expenditure of necessary funds.

In his keynote address before the Annual Council Meeting on the first morning of the Congress, Ned H. Dearborn, president of the National Safety Council, said that "Accident prevention has failed to keep pace with medicine and other sciences in preventing death and suffering. . . . The American people have never failed to respond to any crisis in the nation's history. . . . I submit that a death toll of 100,000 a year and an injury toll of ten million a year constitute a crisis, regardless of whether the lives are lost amid the fury of the battlefield or in the quiet of our own homes.

"If we are content to let accidents remain the No. 1 killer of future American productivity, then let's say so and reconcile ourselves to the fact. I refuse to believe that we will surrender to the defeatist attitude that we are doing all we can for safety, and that nothing more can be done."

Following Mr. Dearborn at the Annual Meeting, a particularly appropriate figure of speech characterized the theme of a woman traffic judge who courageously accused her male colleagues of administering what she termed "powder puff justice." Judge Reva Beck Bosone, of the Salt Lake City municipal court, believes in traffic enforcement education—and she feels the success or failure of the traffic accident program is definitely up to the judge.

Another speaker at the Annual Meeting was James Tanham, vice president of the Texas Company, who was elected chairman of the National Safety Council's board of directors on the opening day of the Congress. Speaking of safety and its relativity to good business, Mr. Tanham addressed management by stating that its responsibility is four-field.

1) Be serious about safety. Don't stop merely with the organization of a safety department. Demand results.

H. E. Heubner, presiding general chairman of the Pulp and Paper Section

2) Invest wisely in the program; give it enthusiastic support. An inexpensive program with enthusiasm is far more productive than the reverse.

3) Give the program personal attention. Commend good performance; censure lack of accomplishment.

4) Recognize that safety is a 24-hour responsibility. Whether hurt on or off the job, a worker still is lost to production. Injuries to his family affect his efficiency. A really safety-minded person cannot stop short of a general interest in safety in our communities, on the highways, in the home, and in all the affairs of life.

Ned H. Dearborn, who has served as president of the National Safety Council for the past four years, was re-elected to that office for the coming year. Before his election as president of the Council in 1944, Mr. Dearborn served as executive vice president for two years.

At the annual banquet of the Congress, the distinguished guest and speaker of the evening was Lt. Gen. Robert L. Eichelberger, commander of the famed 8th army in war and in the occupation of Japan.

In most of the 200 sessions of the Congress, practically every phase of accident prevention and safe practices was discussed. The sessions were distributed in the Stevens, Congress, LaSalle, Morrison and Sherman Hotels. There were two exhibits: the Industrial at the Stevens, the Public Safety at the Sherman. Practically every piece of equipment and product needed for the safe operation of industry and business was displayed.

PULP AND PAPER SECTION

The first meeting of the Pulp and Paper Section opened on Monday afternoon (the 18th) with General Chairman H. P. Heubner welcoming a large gathering of member mill representatives and visitors. This yearly get-together is anticipated by safety workers within the industry as a milestone of progress and achievement as well as an important season of counsel. The meetings of the Section always bring an exchange of ideas that is invaluable, and the spirit of camaraderie is highly stimulating.

Chairman's Report

In his report to the Section summarizing the progress made during the past year, Chairman Heubner began by stating that the Government concedes the shortage of skilled labor is increasing and that this trend likely will continue in view of the demands of Selective Service and the Armed Forces. The opening point stressed by the Chairman was the waste of manpower—the effect of accidents on this shortage of skilled labor. He said:

The occurrence of even minor accidents is a waste of manpower since we know that first-aid or doctor's treatments takes a man away from his job. A salesman doesn't serve his customers nor does a machine tender make paper while either is lying on a hospital cot. The prevention of accidents includes not only the avoidance of human injury but the damage to property as well. Even with only slight injury to personnel, the damage to machinery involved in an accident sometimes takes weeks to repair with resultant production losses. No matter how we look at them, *accidents are a waste*. The most important reason, of course, for not having accidents is the humanitarian reason.

All of you have received *Accident Facts* published by the Council. This book reported 17,000 deaths occurred in work accidents in 1947, and over 2,000,000 disabling accidents including

R. Chapman, of Howard Smith Paper Mills, Ltd. (Cornwall, Ont.), speaking before the Tuesday afternoon session

some 90,000 which resulted in some permanent impairment on the part of the injured. The National Safety Council also published accident rates in the pulp and paper industry in 1947. We can happily report that the frequency and severity rates in 1947 were sharply lower than the rates in the previous year. Decreases of 20 per cent and 18 per cent respectively exceeded the corresponding decreases of 10 per cent and 7 per cent for all industries combined.

Notwithstanding the improvement in the pulp and paper industry the accident rate pamphlet goes on to say that the pulp and paper industry ranked only slightly better than in the previous year. This is primarily caused by the improvements in the rates of other industries.

We are gathered for this 36th Annual Safety Congress to determine what further action all of us can take to improve the record in our industries and in our own companies. Our industry standing is much too high.

The National Safety Council is not a thing apart but is constituted by ourselves and companies which we represent. Each of us is the National Safety Council, and whatever the Council accomplishes is what we accomplish ourselves. The people who work at 20 North Wacker Drive are our staff who stand ready to assist us in our endeavors.

I am very pleased to report to you that your committees have worked strenuously on their various programs, all aimed at the reduction of accidents. These committees consist of yourselves and your colleagues. The committee members and their companies have contributed substantially in time and otherwise to make the activities of the 1947-48 pulp and paper section worth while. Three executive committee meetings were held during this year, two at Chicago and one at New York.

All of you have received the monthly *News Letter* which had a circulation average of 1112 companies which we believe is the largest circulation ever before enjoyed by our publication. The *News Letter* has spoken for itself. It was a very excellent publication and the editor, Mr. Brett, is to be complimented and thanked for the work which he did. Many plant publications and a large amount of other information was forwarded to the editor for incorporation in the *News Letter*. Each company and individual who so contributed has had a hand in making the *News Letter* a success. It should be noted that the one page column entitled "Items of Interest" or "Noted Here and There" is the only one of its kind among the National Safety Council industrial publications. The page is intended to keep us informed on promotional ideas being used in various plants and in some instances items on the activities of our personnel.

Our Health Committee has been active in answering whatever inquiries on health problems were sent in to the Council. Dr. Stark, Chairman of the Health Committee, reports that whatever information was developed has been reported in the *News Letter*. The only disappointment he has is that so very few requests have been received that the Health Committee was not able to do more.

The Pulpwood Loggers Division has prepared three papers entitled "Pulpwood and Log Handling Hand Tools," "The Prevention of Fires on Pulpwood Logging Operations," "Pulpwood Hauling with Horses." In addition, the Visual Aids Committee of the Pulpwood Logging Division submitted 13 sketches for consideration as posters. All of these are splendid sketches and copies have been sent out to the general membership. The Pulpwood Logging Division is to be complimented on its work.

The Pulp Manufacturing Division has submitted material on papers and cards covering "Pressure Apparatus and Pipe Lines," "Safety in the Wood Room," "Unloading Pulpwood at the Mill," "Handling Storage of Pulp Laps," "The Acid Plant," "Grinder Stores," "Charging Magazine Grinders" as well as "Handling Shafts and Cores."

The Paper Manufacturing Division reports also that it has presented some 45 poster ideas some of which are being further developed by the Council for issue. The first draft of the script for the safety sound film has been forwarded to Chicago and it is intended that this will be discussed with members of the Section here at the Congress. Taking of pictures and production of the film will continue this work this year. The Publications Committee of the Paper Manufacturing Division is working on a booklet outlining the duties and safe practices of men operating the wet end of a paper machine.

A large delegation from Kimberly-Clark Corporation attended the Annual Safety Congress

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FOR 35 YEARS WATER CONDITIONING HEADQUARTERS

The Paper Products Division has included among its work drafts of a paper on asphalt roofing plant safety.

The Section continues to co-operate with the American Paper and Pulp Association, Canadian Pulp and Paper Association, Ontario Pulp and Paper Makers Safety Association, Quebec Paper and Pulp Safety Association and others. You will hear more about our plan to conduct a Speakers Bureau for the benefit of trade associations. You have all noticed the change in the name of the Section earlier this year.

In all I think that you will all agree that your executive committee and various division committees have been exceedingly active in this last year. I want to publicly thank, on behalf of the Council and myself, the Chairman and members of every committee in this Section who contributed so much time and effort in this work. The Council staff has informed us that the Section has turned out more work than ever before. I particularly want to compliment and thank Pete Marconi, our staff representative, for his splendid assistance.

Committee Reports

At the close of his report, Chairman Heubner asked for statements from some of the Committee Chairmen.

In a brief review of the paper and pulp accident experience, *Fred W. Braun,* chairman of the Statistics Committee made a recommendation that a new form be developed, one that when properly filled out would reveal the actual cost of an accident.

The work of the Membership Committee was reported by its chairman, *R. W. Croucher,* who also acted as vice chairman of the Section during the past year. He stated that the Committee had done a considerable amount of preliminary work in developing good prospect lists. Of ten new members reported by Mr. Croucher, four were attributed to Roundup activities.

The Nominating Committee chairman, J. Fred Berry, read the slate of officers nominated to serve for the coming year. The committee's report was accepted and the election of officers recorded. The new General Chairman of the Section is R. W. Croucher, safety officer, Minnesota and Ontario Paper Company, who has served as vice chairman and Membership Committee chairman for the past year. *(The complete slate of new officers and committee chairmen appears as the concluding part of this report.)*

In Memoriam

At this point in the program, A. Scott Dowd stepped to the platform to pay tribute to the late James McGivney, Brown Company, Berlin, New Hampshire, who passed away September 6. Mr. McGivney served on the slate of officers for the past year as Regional Membership Representative, in the East. He had long been active in the work of the Pulp and Paper Section.

Contest Awards

The second part of the first session was devoted to the presentation of trophies and certificates given to winners in the Paper Industry Safety Contest.

The Chairman introduced A. Scott Dowd, chairman of the Contest Committee, who presented the following report on the contest:

Data on the 1947-1948 Paper Industry Safety Contest

The Pulp and Paper Section of the National Safety Council completed on June 30, 1948, its 24th consecutive annual safety contest. Two hundred and ninety-nine contesting units, comprised of two hundred and nineteen mills in the Pulp and Paper Mill, Division I, and eighty plants in the Paper and Board Remanufacturing, Division II, reported a total exposure exceeding 366,000,000 man-hours during the contest year, which exceeded that of any previous year.

Frequency Records

The average frequency rate of all contestants for the year was 14.20. This was 22 per cent below the national average of 18.22 for all companies in the Paper and Pulp Industry reporting their experiences to the National Safety Council in 1947. It was a reduction of 15 per cent (identical contestants) of the rate 16.38 made in the previous contest. Two hundred and twenty-four plants had rates below the national average.

Perfect Scores

Twelve contestants finished the contest with perfect scores. Two of these were in Group C and five in Group D of Division I; two of them were in Group B and three in Group C of Division II.

Frequency Below 10.00

One hundred and twenty-two contesting units, or 40 per cent of the entire enrollment, finished the contest with frequency rates below 10. In addition to fifteen plants ranging 1, 2, and 3 in their respective groups, one hundred contestants had a frequency rate below the group averages, and reduced their rate by comparison with those in the previous contest.

Frequency Rates by Divisions and Groups:

The average rate of the two hundred and nineteen contestants in the Pulp and Paper Division was 14.20, or 15 per cent below the average rate of this Division in the previous contest. The average rate of the eighty plants in the Remanufacturing Division was 14.18, or 13 per cent below the average rate of this Division in the previous contest. All groups in both Divisions made substantial reductions, as shown in the printed list.

Final standings of contestants ranking 1, 2, and 3 in each group, were as follows:

DIVISION I—Paper and Pulp Mills

Group A—Mills averaging more than 170,001 man-hours per month. Enrollment 51; group's average frequency rate, 10.91.

(1) Anglo-Canadian Pulp and Paper Mills, Ltd., Quebec, Canada; rate 1.03

(2) The Champion Paper and Fibre Co., Hamilton, Ohio; rate 1.24

Four active members of the Section discuss safety matters with a visitor following the luncheon on Tuesday. Left to right: George W. Harper, The Mead Corp., Sylva, N.C.; H. B. Goodrich, Strathmore Paper Co., Woronoco, Mass.; C. L. R. Dougherty, Union Bag and Paper Corp., Savannah, Ga.; R. W. Croucher, Minnesota and Ontario Paper Co., International Falls, Minn.; and Gunnar Hultmän, managing director, Swedish Pulp Employees Ass'n, Stockholm, Sweden

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Cordially yours,

Sam C. Ford

Governor

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(3) Consolidated Paper Corp., Ltd., Wayagamack Division, Cap Madeleine, Que.; rate 1.43

Group B—Mills averaging 85,001 to 170,000 man-hours per month. Enrollment 57; group's average frequency rate, 15.22

(1) Kimberly-Clark Corp. (Badger-Globe Mill), Neenah, Wis.; rate 2.37

(2) International Paper Co., Niagara Falls, N.Y.; rate 2.97

(3) Crown-Zellerbach Corp., Port Townsend, Wash.; rate 3.43

Group C—Mills averaging 42,501 to 85,000 man-hours per month. Enrollment 50; group's average frequency rate, 21.46

(1) The Mead Corp., Sylva, N.C.; rate 0.00

(1) Armstrong Cork Co., Pensacola, Florida; rate 0.00

(3) Certain-teed Products Corp., York, Pa.; rate 1.73

Group D—Mills averaging 6,000 to 42,500 man-hours per month. Enrollment 61; group's average frequency rate, 24.64

(1) Container Corp. of America, Carthage, Ind.; rate 0.00

(1) Hollingworth & Whitney Co., Madison, Maine; rate 0.00

(1) Certain-teed Products Co., Dallas, Texas; rate 0.00

(1) Riegel Paper Corp. (Hughesville Mill) Riegelsville, N.J.; rate 0.00

(1) Kimberly-Clark Corp. of Canada, Kapuskasing, Ont.; rate 0.00

DIVISION II—Paper and Board Remanufacturing

Group A—Plants averaging 85,001 or more man-hours per month. Enrollment 18; group's average frequency rate 11.68.

(1) Scott Paper Co., Chester, Pa.; rate 2.35

(2) Container Corp. of America, Boston, Mass.; rate 2.67

(3) The Flintkote Co., E. Rutherford, N.J.; rate 3.81

Group B—Plants averaging 35,001 to 85,000 man-hours per month. Enrollment 26; group's average frequency rate, 14.89.

(1) Canadian Cellulose Products Co., Ltd., Niagara Falls, Ont.; rate 0.00

(1) Old Colony Envelope Co., Westfield, Mass.; rate 0.00

(3) Kimberly-Clark Corp., Memphis, Tenn.; rate 3.56

Group C—Plants averaging less than 35,001 man-hours per month. Enrollment 36; group's average frequency rate, 21.38.

(1) Thilmany Pulp and Paper Co. (Bag Mill) Kaukauna, Wis.; rate 0.00

(1) The Flintkote Co. (Paper Box Division) Hollywood, Calif.; rate 0.00

(1) Bay West Paper Co., Green Bay, Wis.; rate 0.00

The magnificent record of the Bay West Paper Company, Green Bay, Wisconsin—contestant in Group C, Division II, continued unbroken at the close of the 1947-1948 contest on June 30, 1948. This plant had operated continuously without a lost-time accident for eleven years and nineteen days. As a special recognition and tribute to the employees and management of this plant which has made such a glorious record, I ask Mr. John A. Long, superintendent of the Bay West Paper Company, and any others from that plant who are present today, to rise and accept our congratulatory applause.

Edward Benton Fritz Memorial Trophy

The winner of the Edward Benton Fritz Memorial Trophy, donated by Fritz Publications, Inc., publisher of THE PAPER INDUSTRY AND PAPER WORLD, is the contestant which by a majority vote of five judges, named in the rules, has in their opinion made the best safety achievement among the Pulp and Paper Mill participants in the contest, based upon frequency, man-hours worked, physical conditions and other contributing factors. The problem presented to the judges this year of selecting among those who have led their representative groups in Division 1 of Pulp and Paper Mills required special thought and the consideration of contributing factors outside of those that are simply arithmetical. It is true, of course, that the best record that any mill—large or small, can make is a perfect score. The quality of perfection is no less in a small plant than it is in a large one, and a perfect record is most generally the result of carefully planned, well organized safety work. It is also true that hazards in integrated pulp and paper mills are more varied and numerous than in individual paper mills, paperboard mills, or pulp mills, although these vary in accordance with processes involved, climatic conditions, etc.

Reports from the group winners that were submitted to the judges this year revealed how sincerely in most cases the managements have assumed their share of responsibility in organizing safety activities and by their investments in property improvements to insure safe and more efficient operations.

The winner of the grand prize in the 1947-1948 contest is: *The Container Corporation of America, Carthage, Indiana.* This mill tops the list of perfect scores in Group D. It manu-

Grand Prize in the Paper Industry Safety Contest—the Edward Benton Fritz Memorial Trophy—is presented by Mrs. Fritz to Paul E. Sigler, of the Container Corporation of America, Carthage, Indiana

factures strawboard and liner-board, operating three cylinder machines, with an average employment of 180 men and women.

Brief Outline of Activities

All employees of this mill are required to pass a pre-employment physical examination.

A registered nurse is in attendance in the first-aid department eight hours during the day. A doctor is regularly scheduled two mornings a week. Both nurse and doctor are available on call.

Plant inspections are made weekly by the foremen and safety committee.

Prompt attention given to employee's suggestions has resulted in obtaining and maintaining high employee interest. During the last contest over one hundred suggestions were accepted by the Safety Committee, work orders issued, and completed. A few of these suggestions required the Plant Manager's approval because substantial labor and money expenditures were involved.

A regular safety shoe contest helps to maintain interest and promote the wearing of safety shoes.

A safe worker contest has been effective in maintaining employee interest.

The plant buildings have been subject to an extensive modernization program to effect a more efficient and safe operation. In many places conventional brick walls have been replaced with glazed tile and glass building blocks. Fluorescent lighting has been installed throughout.

The use of color in painting machinery has added considerable atmosphere to the mill.

Various employees have been designated by supervision as members of a fire brigade.

Smoking areas are carefully defined and well policed.

The plant is equipped with modern, sanitary, tiled locker rooms where each employee has his own locker. There is also a beautiful, modern cafeteria, seating about 50 employees at a time. A balcony lounge in the cafeteria, attractively furnished and decorated, provides employees with comfortable facilities for relaxation.

Through newspaper publicity in the surrounding areas the success of the safety program has attracted considerable attention. This helps to build up employee morale and attracts job applicants from other communities.

These activities are believed to be instrumental in obtaining a high level of employee interest in the company's safety program.

Safety is a matter of primary concern to the company's top management. There is a safety division in the Industrial Relations Department, under the direction of a safety director. The latter is responsible for developing the basic over-all safety program, coordinating its operation in the company's various plants and assisting the managements of the plants in advisory capacity. A printed *Accident Investigator's Manual* has been prepared by the Safety Division for use and guidance in investigating and reporting accidents. This procedure has been quite effective in standardizing reports and permitting analysis.

It is my honor and pleasure at this moment to present a lady who needs no introduction to those who have attended our meetings in the last number of years. The joy which her presence brings to us reminds me of the beauty and fragrance that is expressed each year in her lovely garden, which is rich and resplendent under her loving care, and the happiness which this gives to her neighbors and friends.

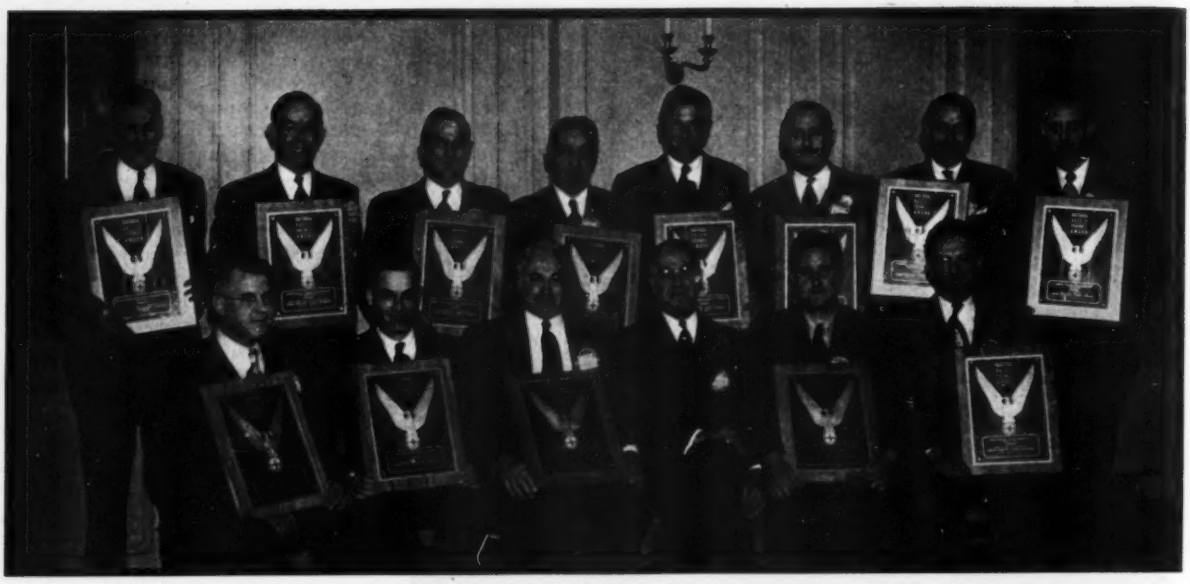
As vice president and treasurer of Fritz Publications, Inc., Chicago, donor of the *Edward Benton Fritz Memorial Trophy*, she has represented her husband who, as a pioneer of safety in the paper and pulp mills of North America, personally awarded this prize to mill winners for many years previous to his death. Mrs. Fritz has always given us an inspiring message and again it is my pleasure to present our friend and ask her to present the Grand Prize.

Mrs. Fritz Presents the Grand Prize

This is the 36th National Safety Congress and for the last nine of these meetings I have been privileged to meet with you to do the little service of presenting the *Edward Benton Fritz Memorial Trophy*, and I am happy to be here today.

Safety surely seems to be in the air. Everyone appears to be keyed up to the subject and I hope that the atmosphere will continue to be freighted with safety to the extent of tempering the headlines in our newspapers.

A Sunday School class is supposed to have been asked what was meant by the Bible term, "the quick and the dead." A little youngster spoke up and said, "Well, when you see an automobile coming right at you, if you are quick you will get out of the way, if you are not you are dead," and that seems to be the case many times. We are all working for safety in our own way, trying to find the best way to procure it to keep our homes, and business places, churches, theatres, etc., from the hazards of accidents, fire and storm, but there is one medium which is sometimes neglected. Perhaps it is because it was advocated thousands of years ago, but it is just as efficacious today as it was then and has been proven so by those who had faith in it. It may be found in the 7th verse of the 91st Psalm, "A thousand shall fall at thy side and ten thousand at thy



Trophies awarded to group winners by National Safety Council were received by the following company representatives: FRONT ROW (L to R)—George W. Harper, The Mead Corp., Sylva, N. C.; John C. Arnold, Kimberly-Clark Corp. (Badger-Globe Div.), Neenah, Wis.; J. A. Long, Bay West Paper Co., Green Bay, Wis.; J. E. Long, past president of the National Safety Council, who made the awards; John Truscott, Kimberly-Clark Corp. of Canada, Kapuskasing, Ont.; Wm. L. Holmes, Armstrong Cork Co., Pensacola, Fla. . . . SECOND ROW (L to R)—Paul B. McInerney, Certain-teed Products Corp., Dallas, Texas; Ernest Dutcher, Flintkote Co., Hollywood, Calif.; H. G. Kokesch, Anglo-Canadian Pulp & Paper Mills, Ltd., Quebec, Can.; Clifford H. Kemp, Thilmany Pulp & Paper Co. (Bag Mill), Kaukauna, Wis.; Paul E. Sigler, Container Corp. of America, Carthage, Ind.; James N. Conoway, Scott Paper Co., Chester, Pa.; Joseph Russell Ryall, Canadian Cellucotton Products, Niagara Falls, Ont.; Wm. M. Gillingham, Riegel Paper Corp. (Hughesville mill), Riegelsville, N. J.

right hand but it shall not come nigh thee." Of course, it is understood that we have to earn this kind of protection, but do we not have to earn anything that is worth while.

About twenty years ago I attended a Paper Mill Convention in New York City with my husband and one of the speakers at the banquet was white-haired Dr. Boynton. I am sure some of you older men remember him. He was very much loved. At the end of his address he gave a little poem which so impressed my husband that years later he thought of it and wanted to use it in something he was writing but he could not think of the name of it. Finally it was found at the library after much scouting. I have with me this afternoon this little poem and I'd like to use it. I hope it will have the same effect upon you as it did upon us. It is called "Abou Ben Adhem" and was written by Leigh Hunt.

Abou Ben Adhem—May his tribe increase!
Awoke one night from a deep dream of peace.

And saw, within the moonlight in his room;
Making it rich and like a lily in bloom,
An angel writing in a book of gold.
Exceeding peace had made Ben Adhem bold
And to the presence in the room he said:
"What writest thou?"
The vision raised its head,
And with a look made of sweet accord answered,
"The names of those that love the Lord."
"And is mine one?" said Abou.
"Nay not so," replied the angel.
Abou spoke more low, but cheerily still; and said,
"I pray thee then write me as one who loves his fellow-men."
The angel wrote and vanished.
The next night it came again with a great awakening light,
And showed the names whom the love of God had blessed,
And lo! Ben Adhem's name led all the rest.

And now I have the business at hand to make the presentation of the *Edward Benton Fritz Memorial Trophy* to the winner in this contest. The Container Corporation of America at Carthage, Indiana.

Paul E. Sigler, general manager of the Container Corporation of America, Carthage, (Ind.) plant accepted the trophy from Mrs. Fritz with the thanks of his entire organization.

Trophies and Certificates Presented by NSC

Following the award of the Grand Prize, J. E. Long, past president of the National Safety Council, was introduced by Chairman Heubner to make the NSC awards for the Pulp and Paper Section. Mr. Long has officiated at these presentations for a number of years and is well known to the Section.

Awards given by the National Safety Council at the close of each contest are: (a) contestants finishing with Rank One in their respective groups are presented with First Place Trophies; (b) those ranking two and three receive Second and Third Place Certificates; (c) Achievement Certificates are awarded to each unit (except first, second, and third place) having a frequency rate below the group average, and also showing a reduction to rate by comparison with its rate in the previous contest. This year the number of achievement certificates awarded reached a high of one hundred. *(A list of these certificate winners appears elsewhere in this story.)*

Luncheon Meeting

A capacity attendance filled the south ballroom for the Sections Annual Luncheon on Tuesday, the 19th. The affair was entirely social in character, with no set program other than the showing of a sound-slide film, entitled "Carelessness Costs You" produced by Eddie Albert Productions and distributed by Local 1031, International Brotherhood of Electrical Workers, AFL of Chicago.

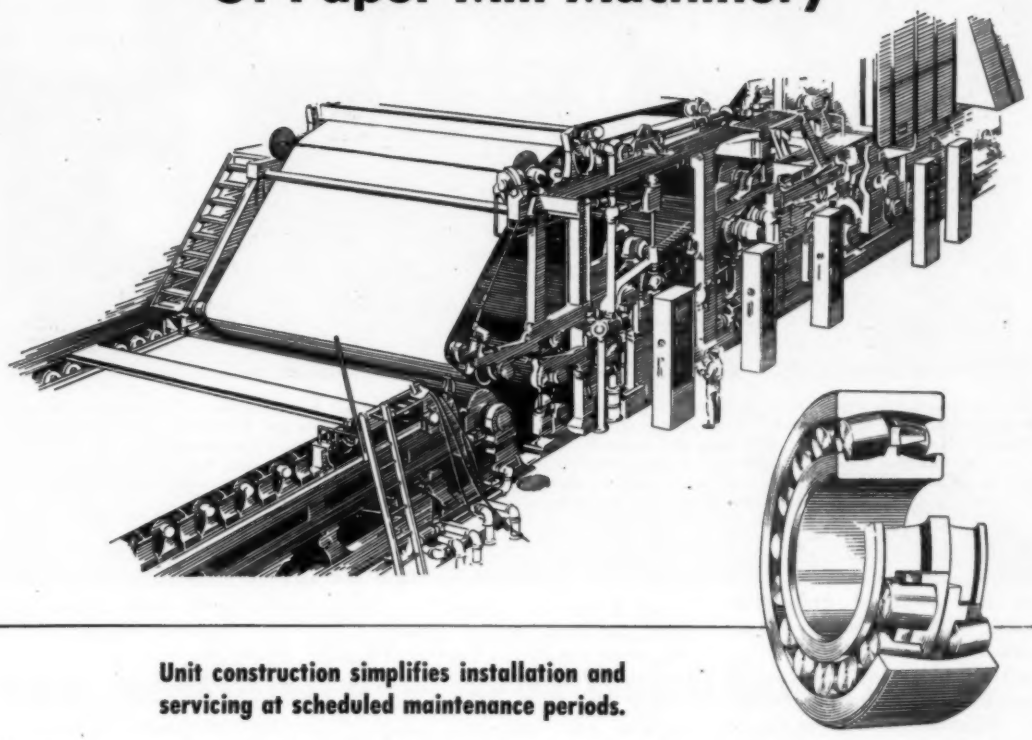
R. W. Croucher, newly elected General Chairman of the Section, presided, assisted by past-chairman, H. B. Heubner, and some amusing innovations were introduced which included an award of a "pot of gold."

Five Papers Presented

The session on Tuesday afternoon was devoted entirely to the presentation of papers, as follows:

"Safety in Pulpwood Logging Operations" by James A. Ryan, woods manager, Ontario-Minnesota Pulp & Paper Co., Ltd.

Torrington Spherical Roller Bearings ...For Dependable All-'round Performance Of Paper Mill Machinery



Unit construction simplifies installation and servicing at scheduled maintenance periods.

When Torrington Spherical Roller Bearings are used in calender stacks, screens, dryers, chippers, beaters and other paper mill machinery, you are assured of precision operation, long service and low maintenance costs.

The reasons? Consider these:

... The self-aligning feature allows the bearing freedom to adjust to shaft deflection or misalignment under maximum load conditions.

... The low friction coefficient and precision tolerances of Torrington Spherical Roller Bearings assure smooth starting and running—in the most exacting applications.

... Construction of the bearing assures axial stability of shafts, for proper meshing of gears and drives with end play eliminated.

... Positive sealing reduces danger of spoilage of material through oil leakage.

Whatever your requirements—whether you design, manufacture or operate paper machinery—Torrington engineers will be glad to help you with any bearing problems. Their many years of specialized experience in the design, construction and application of all major types of anti-friction bearings is yours without cost or obligation. Call or write your nearest Torrington office.

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TORRINGTON SPHERICAL ROLLER **BEARINGS**

SPHERICAL ROLLER · TAPERED ROLLER · STRAIGHT ROLLER · NEEDLE · BALL · NEEDLE ROLLERS

Certificates were awarded to second and third winners in each group of the paper industry contest by the National Safety Council. Shown here after the presentations are: FIRST ROW (L to R)—Julius A. Draper, Consolidated Paper Corp., Ltd. (Wayagamack Div.), Three Rivers, Que.; Robert J. Hutchison, Flintkote Co., East Rutherford, N. J.; J. E. Long, past president of National Safety Council, who awarded the certificates; A. E. Topmiller, Champion Paper & Fibre Co., Hamilton, Ohio. . . . BACK ROW (L to R)—Howard H. Dyke, International Paper Co., Niagara Falls, N. Y.; Carl A. Scharninghousen, Container Corp. of America, Boston, Mass.; Werner Leipold, Kimberly-Clark Corp., Memphis, Tenn.; Otto R. Hartwig, Crown Zellerbach Corp., Port Townsend, Wash.; Paul B. McInerney, Certain-teed Prods. Corp., York, Pa.

"Hazards Encountered in the Chemical Pulp Industry," by R. Chapman, chairman Mill Accident Prevention Committee, Howard Smith Paper Mills, Ltd.

"Wood Room Hazards" by George S. Nelson, Claims & Safety Mgr., Consolidated Water Power & Paper Co.

"The Accident - Prone Can Be Helped—a Simple Approach" by C. L. R. Dougherty, assistant manager, Industrial Relations Div., Union Bag & Paper Corp.

"A Foreman Safety Training Program" by L. B. Schloemer, central safety & plant protection supervisor, Marathon Corp. (Menasha, Wis.)

(Abridgments of some of these papers may be found in this issue. See Convention Papers . . . Abridged.)

Four Round Table Discussions

The last meetings of the Pulp and Paper Section were held on Wednesday afternoon when four round table sessions were held simultaneously. Each of these conferences was presided over by an experienced chairman. Also directing the discussions at each were a conference leader and a conference expert. Each session was provided with a means for recording the discussions: reporter, sound recorder, and stenotypists.

Highlighting the questions brought before these sessions were:

(a) *Pulpwood Logging* — Chain saws; are they safe for felling . . . Pulpwood trucks . . . Control of hand tools . . . Ice hazards.

(b) *Pulp Manufacture*—Safety precautions when unloading wood . . . Protective equipment . . . Safe operation of barking drum . . . Safe procedures for making and handling cooking liquor, kraft, semichemical, soda . . . Digester hazards . . . Slippery floors, etc.

R. W. Croucher, Minnesota and Ontario Paper Company, International Falls, Minn., who was elected to serve as General Chairman of the Pulp and Paper Section for the coming year

(c) *Paper Manufacture*—Safe precautions when unplugging a beater . . . Essential speed of carrier ropes (fpm) for safe machine operations . . . New recommendations for guarding nips on calenders . . . Guards for rewinder nip points . . . Safe Methods to use in handling paper rolls.

(d) *Paper Products*—Good housekeeping . . . Guarding of lift trucks for piling paper . . . Fire precautions for storage . . . What about usable guard for trimmer press? . . . Paper cuts . . . Goggle program.

New Executive Committee

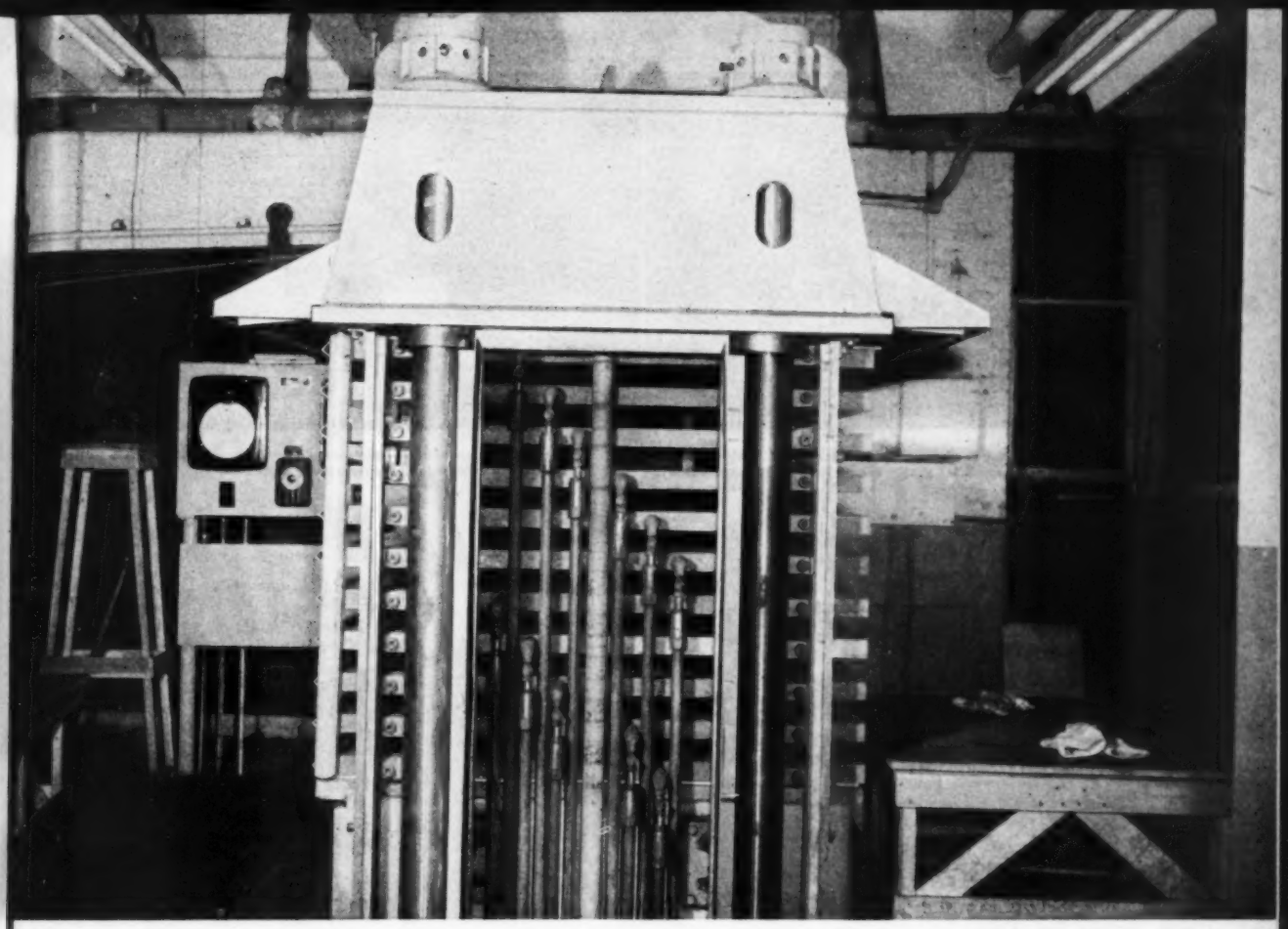
The following new officers and committees were elected to serve for the year 1948-1949:

Officers

General Chairman—R. W. Croucher, safety officer, Minnesota & Ontario Paper Co., International Falls, Minn.

Vice Chairman and Membership Committee Chairman—George W. Harper, safety director, The Mead Corp., Chillicothe, Ohio.

Secretary & Program Chairman—C. L. R. Dougherty, assistant manager, Industrial Relations Dept., Union Bag & Paper Corp., Savannah, Ga.



Solves heat-and-water problem...

Lubrication of the telescopic steam joints on a hot-plate veneer press was a continual problem for a midwest furniture manufacturer. The job required a grease that would withstand temperatures of 240° to 260°F. and the severe washing action of steam and water.

Conventional greases failed to meet these requirements. Joints had to be lubricated frequently. This interfered with production and resulted in excessive consumption of the lubricant.

A Standard Oil Lubrication Engineer suggested that Stanolith Grease No. 57 be used. This is a lithium soap product capable of standing up under high temperatures and of resisting the washing action of water. Since the switch to "Stanolith," the joints have been lubricated between shifts with no interruption of production. Lubricant consumption has been reduced 40%.

Stanolith Grease No. 57

Where the combination of heat and water causes lubrication difficulties, try Stanolith Grease. A Standard Oil Lubrication Engineer will be glad to give you more data on this versatile product. If your plant is located in the Midwest, write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois, to secure the services of the engineer nearest you.

STANDARD OIL COMPANY (INDIANA) STANDARD

Two of the Round Table sessions, four of which were held simultaneously on Wednesday afternoon. Left—Pulpwood Logging session discussions were taken by a stenotypist; Right—Recording equipment was used for the proceedings of the Pulp Manufacture discussion group

News Letter Editor — H. B. Goodrich, maintenance & safety engineer, Strathmore Paper Co., West Springfield, Mass.

Statistician—Fred W. Braun, vice president & chief engineer, Employers' Mutual Insurance Co., Wausau, Wis.

Regional Membership Representatives: East—H. P. Heubner, insurance manager, The Flintkote Co., New York, N.Y.; South—George Merriman, co-ordinator of personnel, International Paper Company, Mobile, Ala.; Great Lakes—E. A. Page, personnel superintendent, Kimberly-Clark Corp., Neenah, Wis.; West—Ernest Dutcher, safety engineer, Pioneer Division, The Flintkote Co., Los Angeles, Calif.; Canada—Douglas B. Chant, secretary engineer, The Ontario Pulp & Paper Makers Safety Association, Toronto, Ont., Canada.

Committees

Health Committee—Dr. James D. Stark (Chairman), medical director, Hammermill Paper Co., Erie, Pa.; Miss Ellen A. Phelan, R. N., Rhinelander Paper Co., Rhinelander, Wis.

Contest Committee — A. Scott Dowd (Chairman), president, Fritz Publications, Inc., Chicago, Ill.; W. R. Cahill, personnel director, Nekoosa-Edwards Paper Co., Port Edwards, Wis.; Benjamin D. Rogers, director of personnel, Bird & Son, Inc., East Walpole, Mass.

Pulpwood Logging Division

A. E. Minor (Division Chairman), safety supervisor, The Ontario-Minnesota Pulp & Paper Co., Ltd., Kenora, Ontario, Can.

Publications Committee—R. O. Helberg, Employers' Mutual Insurance Co., Ironwood, Mich.; Laurent Girard, woods personnel supervisor, Consolidated Paper Corp., Ltd., Grandmere, P. Q., Canada; Seth Jackson, safety officer, U. S. Forest Service, Washington, D. C.; Ted Kepner, safety & personnel, Crown Zellerbach, Portland, Ore.

Visual Aids Committee—Fred T. Morrish (Chairman), safety supervisor, The Ontario-Minnesota Pulp & Paper Co., Ltd., Fort Frances, Ontario, Can.; A. J. Keenan, assistant manager, Timberlands Dept., Hollingsworth & Whitney, Waterville, Me.; D. E. Henry, safety co-ordinator, Southern Advance Bag & Paper Co., Hodge, La.

Pulp Manufacturing Division

Julius A. Draper (Division Chairman), director of safety, Consolidated Paper Corp., Ltd., Grandmere, P.Q., Canada.

Publications Committee—E. B. Lambton, safety engineer, St. Regis Paper Co., 230 Park Ave., New York 17, N. Y.; A. S. Cook, manager, Quebec Pulp & Paper Safety Association, 65 St. Anne Street, Quebec, P. Q., Canada; Cyril D. McCan, assistant safety engineer, Crossett Paper Mills, Crossett, Ark.; R. Chapman, mill accident prevention committee, Howard Smith Paper Mills, Ltd., Cornwall, Ont., Can.

Visual Aids Committee—Thomas Furness (Chairman), safety director, Champion Paper & Fibre Co., Canton, North Carolina; George S. Nelson, claims & safety manager, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.; Dan McGillicuddy, safety director, Rayonier, Inc., Olympia, Wash.; John J. Long, safety director, Virginia Pulp & Paper Co., Luke, Md.

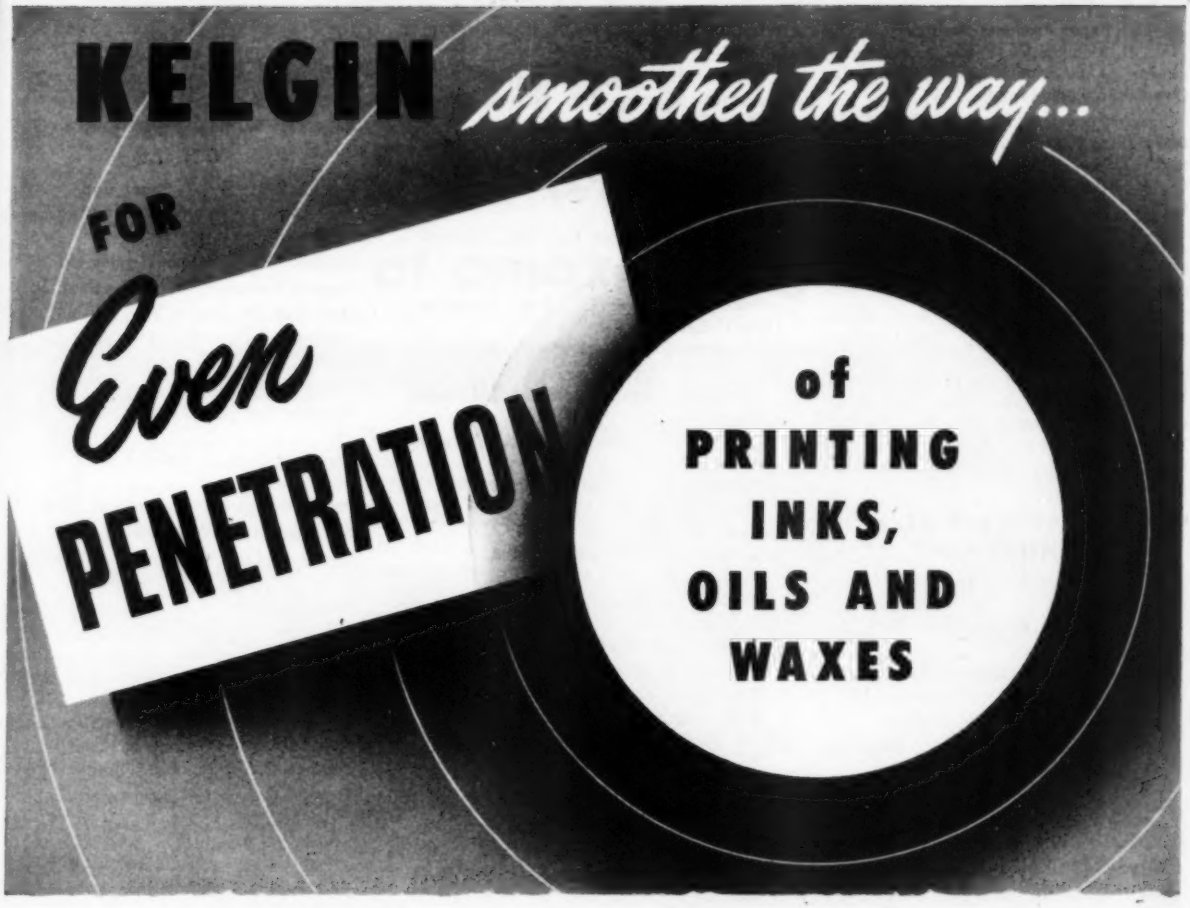
Paper Manufacturing Division

D. U. Hill (Division Chairman), director of safety, Kingsport, Tenn. Division, The Mead Corp.

Publications Committee — Arthur Carle (Chairman), safety director, The Northwest Paper Co., Cloquet, Minn.; E. V. Johnson, safety director, Kimberly-Clark Corp., Neenah, Wis.; H. E. Newbury, safety director, Ecusta Paper Corp., Pisgah Forest, N. C.; C. C. Coughlin, safety director, Gulf States Paper Corp., Tuscaloosa, Ala.

Visual Aids Committee — George H. Pearce (Chairman), mill safety officer, Bathurst Power & Paper Co., Bathurst, New Brunswick, Can.; Stanley C. Brown, safety director, The Ontario Paper Co., Ltd., Thorold, Ontario, Can.; G. Russell Leonhard, director of safety, Paterson Parchment Paper Co., Bristol, Pa.; A. E. Topmiller, safety engineer, Champion Paper & Fibre Co., Hamilton, Ohio.

The largest attendance was registered at the round table on Paper Manufacturing (left). H. B. Goodrich, Strathmore Paper Co., presided at this session and reported the proceedings. The discussions in the Paper Products session (right) were recorded by a stenotypist



Paperboard surface that is uniformly smooth and dense makes for even penetration of printing inks, oils and waxes — assures full ink brilliance, true color values and clean, sharp printing.

These are the results you obtain when you use Kelgin, the modern algin surface sizing agent.

Kelgin is completely adaptable to water box application in the calender stacks.

Easy to handle, it is equally soluble in hot or cold water; will not produce foaming, picking or sticking to the rolls. With Kelgin, you eliminate sheet curling and the need for back sizing.

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Paper Products Division

W. H. McLaughlin (Division Chairman), director of safety & sanitation, Lily-Tulip Cup Corp., Long Island, N. Y.

Publications Committee—W. D. McGuinness (Chairman), assistant insurance manager, The Flintkote Co., New York, N. Y.; G. J. Bienvenu, general superintendent, Gaylord Container Corp., Container Division, Bogalusa, La.; C. H. Kemp, safety director, Thilmany Pulp & Paper Co., Kaukauna, Wis.; G. Shibley, safety director, Ohio Box Board Company, Rittman, Ohio.

Visual Aids Committee—A. J. Basile (Chairman), safety director, The Lawrence Paper Company, Lawrence, Kansas; John Meinhardt, director of safety, Gaylord Container Corp., St. Louis, Mo.; Vincent P. Coulon, safety director, The Sealright Co., Inc., Fulton, N. Y.; H. E. Greenwood, safety director, Union Bag Co., Hudson Falls, N. Y.

CERTIFICATE OF ACHIEVEMENT

DIVISION I—Paper and Pulp Mills

Group A

Flintkote Co. (Pioneer Div.), Los Angeles, Calif.

Hollingsworth & Whitney Co. (Algonquin & Taconnet Div.), Waterville, Me.

Mead Corp., Chillicothe, Ohio.

Price Brothers & Co., Ltd., Kenogami (Que.), Can.

Riegel Paper Corp., Milford, N. J.

Ontario-Minnesota Pulp and Paper Co., Ltd., Fort Frances (Ont.), Can.

Mead Corp., Kingsport, Tenn.

Marathon Corp., Menasha, Wis.

International Paper Co. (Hudson River Div.), Palmer, N. Y.

West Virginia Pulp & Paper Co., Luke, Md.

Bathurst Power & Paper Co., Ltd., Bathurst (N.B.), Can.

Kimberly-Clark Corp., Kimberly, Wis.

Nekoosa-Edwards Paper Co., Inc., Port Edwards, Wis.

West Virginia Pulp & Paper Co., Charleston, S. C.

Container Corp. of America, Philadelphia, Pa.

Kieckhefer Container Co., Delair, N. J.

Marathon Corp., Rothschild, Wis.

Group B

Rhinelander Paper Co., Rhinelander, Wis.

Consolidated Paper Corp., Ltd., Port Alfred (Que.), Can.

St. Croix Paper Co., Woodland, Me.

Minnesota & Ontario Paper Co., International Falls, Minn.

Escanaba Paper Co., Escanaba, Mich.

Fraser Paper, Ltd., Madawaska, Me.

Champion Paper & Fibre Co., Pasadena, Tex.

Wood Conversion Co., Cloquet, Minn.

International Paper Co., Chrisholm, Me.

Combined Locks Paper Co., Combined Locks, Wis.

Fraser Co., Ltd., Edmundston (N.B.), Can.

Restigouche Co., Campbellton (N.B.), Can.

Gardner-Richardson Co., Middletown, Ohio.

Rayonier Inc., Port Angeles, Wash.

American Coating Mills, Elkhart, Ind.

Mead Corp., Lynchburg, Va.

West Virginia Pulp & Paper Co., Williamsburg, Pa.

Paterson Parchment Paper Co., Bristol, Pa.

Beaver Wood Fibre Co., Ltd., Thorold (Ont.), Can.

Group C

Price Brothers & Co., Ltd., Jonquiere (Que.), Can.

Certain-teed Products Corp., Savannah, Ga.

Container Corp. of America, Wabash, Ind.

Certain-teed Products Corp., Niagara Falls, N. Y.

Riverside Paper Corp., Appleton, Wis.

National Container Corp. of Mich., Ontonagon, Mich.

Bird & Son, Inc., Phillipsdale, R. I.

Neenah Paper Co., Neenah, Wis.

National Container Corp. of Va., Big Island, Va.

Flintkote Co., Lockport, N. Y.

Lawrence Paper Co., Lawrence, Kan.

Upson Co., Lockport, New York.

Consolidated Water Power & Paper Co., Appleton, Wis.

Riegel Paper Corp. (Warren Mill), Riegelsville, N. J.

Hollingsworth & Vose Co., East Walpole, Mass.

Group D

Hollingsworth & Vose Co., West Groton, Mass.

Fort Wayne Corrugated Paper Co., Hartford City, Ind.

United States Gypsum Co., North Kansas City, Miss.

Fort Wayne Corrugated Paper Co., Vincennes, Ind.

Riegel Paper Corp. (Riegelsville Mill), Riegelsville, N. J.

Alton Box Board Co., Carlyle, Ill.

Container Corp. of America, Wilmington, Del.

Certain-teed Products Corp., Richmond, Calif.

Spaulding Fibre Co., Inc., Milton, N. H.

Mead Corp., Nashville, Tenn.

American Writing Paper Corp. (Albion Div.), Holyoke, Mass.

United States Gypsum Co., Lisbon Falls, Me.

Certain-teed Products Corp., Kansas City, Miss.

United States Gypsum Co., Lisbon Falls, Me.

American Writing Paper Corp. (Mount Tom Div.), Holyoke, Mass.

Central Fibre Products Co., Tama, Iowa.

Strathmore Paper Co. (Mill No. 2), Woronoco, Mass.

Esleek Manufacturing Co., Turner Falls, Mass.

Mead Corp. (Wheelwright Div.), Leominster, Mass.

Mead Corp., Harriman, Tenn.

American Writing Paper Corp. (Crocker Div.), Holyoke, Mass.

American Writing Paper Corp. (Riverside Div.), Holyoke, Mass.

The Rogers Corp., Goodyear, Conn.

Flintkote Co., Mt. Carmel, Ill.

International Paper Co., Livermore Falls, Me.

American Writing Paper Corp. (Gill Div.), Holyoke, Mass.

DIVISION II—Paper and Board Remanufacturing

Group A

Flintkote Co., Chicago Heights, Ill.

Gaylord Container Corp., Bogalusa, La.

Dixie Cup Co., Easton, Pa.

Continental Can Co. (Container Sub.), Hopewell, Va.

Group B

Sealright Co. (Cap Div.), Oswego Falls, N. Y.

Container Corp. of America, Fort Worth, Tex.

Paper Package Co., Indianapolis, Ind.

Birmingham Paper Co., Birmingham, Ala.

Container Corp. of America, Anderson, Ind.

Container Corp. of America, Rock Island, Ill.

Fort Wayne Corrugated Paper Co., Hartford City, Ind.

Group C

Kimberly-Clark Corp. (Atlas Mill), Appleton, Wis.

Gaylord Container Corp., Tampa, Fla.

Container Corp. of America, Baltimore, Md.

Southwest Corrugated Box Co., Fort Worth, Tex.

Fort Wayne Corrugated Paper Co., McKees Rocks, Pa.

Gaylord Container Corp. (Carton plant)

South West Box Co., Sand Springs, Okla.

Container Corp. of America (Sixth Street Div.), Philadelphia, Pa.

Gaylord Container Corp., Greenville, Miss.

Gaylord Container Corp., Atlanta, Ga.

▼

MONSANTO CHEMICAL CO. UPHOLDS SAFETY RECORD

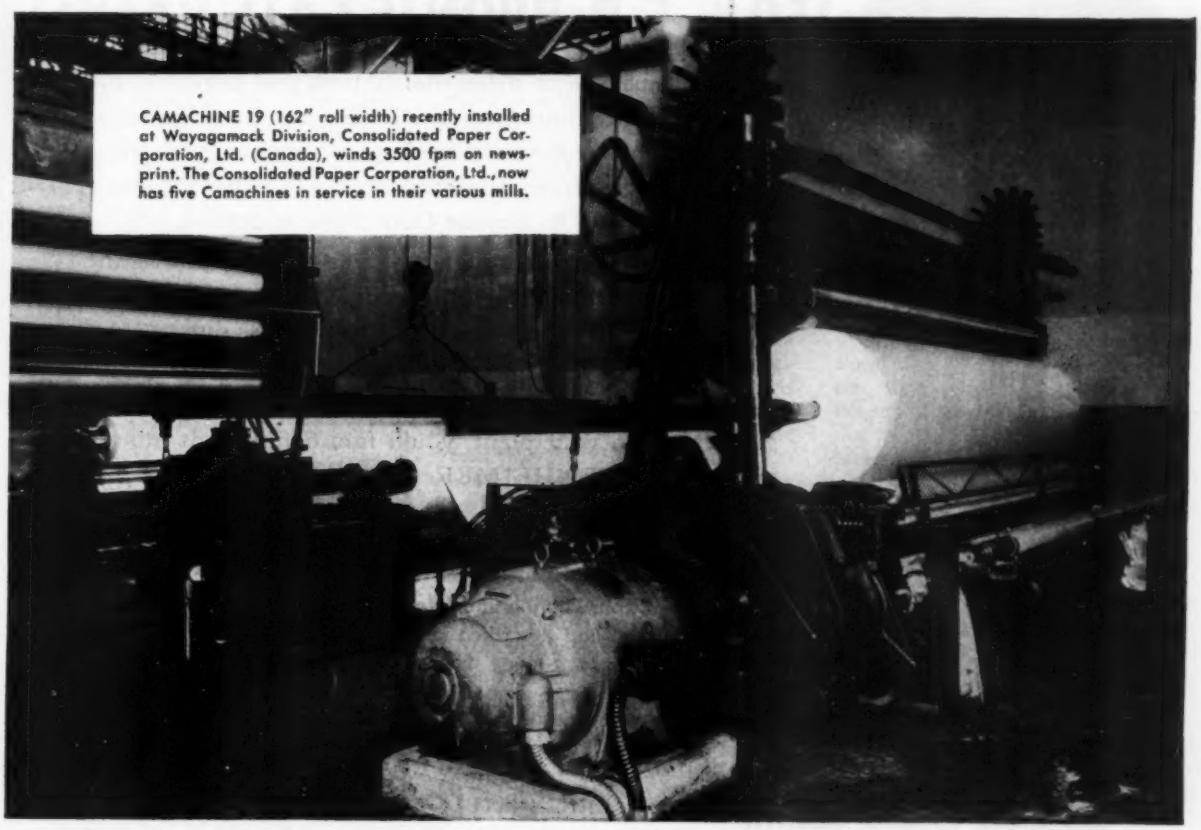
A safety record of more than one million consecutive man-hours without a lost time injury was established at Monsanto Chemical Company's Plastics Division plant on October 8.

Fleix N. Williams, vice president of the company and general manager of the Plastics Division said this was the sixth time in the last 10 years that the plastic plant had made the same record. He also said the Springfield plant has been the recipient of numerous safety awards from local, state and national organizations, including two citations by the National Safety Council for distinguished service to safety. Earlier this year, the plant was the winner in a company-wide safety and housekeeping contest.

The Springfield plant safety program is under the direction of Everett Graham, safety supervisor.

Camachines

...for top roll-winding efficiency at amazing high speeds



CAMACHINE 19 (162" roll width) recently installed at Wayagamack Division, Consolidated Paper Corporation, Ltd. (Canada), winds 3500 fpm on newsprint. The Consolidated Paper Corporation, Ltd., now has five Camachines in service in their various mills.

CAMACHINES, the world over, are keeping well ahead of the pace set by the fastest paper mills . . . producing top-quality shipping rolls of news, book, kraft and paper-board at speeds up to 5000 fpm on newsprint.

Clean-cut, wrinkle-free Camachine rolls, wound to uniform density from core to circumference, give smooth performance on the fastest of web printing presses and processing machines. Exclusive Camachine pneumatic web tension assures constant automatic control of the roll density even at the highest winding speeds.

Other exclusive new Camachine engineering features which are optional on the big mill-type Camachines are: the pneumatic brake on drive and idler roll; push-button controlled motor-driven riding-roll lift and roll ejector; and pneumatically controlled pressure on the cutter wheels and cutter spacer bar.

Write for illustrated literature on modern Camachine slitting and roll-winding equipment for all paper mill and converting plant requirements.

Cameron Machine Company, 61 Poplar St., Brooklyn 2, N.Y.

Camachines
FOR FAST, TOP QUALITY ROLL PRODUCTION
...the world over

"LIKE HAVING THREE VALVES IN ONE"

LUNKENHEIMER

150 lb. S.P. BRONZE GATE VALVES

THE enthusiasm of maintenance men *and* engineers for the Lunkenheimer new 150 lb. Bronze Gate Valves is understandable. Actually, a simple interchange of trimmings provides, from minimum stocks, a valve for every spot where a 150 lb. Bronze Gate Valve is needed.

Ruggedly designed throughout, each valve features the Lunkenheimer developed and patented wear-resistant alloy stem material which eliminates failures due to stem thread wear.

Whether you have one . . . or thousands of 150 lb. bronze gate valves in your plant, you'll find definite advantages in the LUNKENHEIMER Fig. 2150 line of 150 lb. gate valves.

PHONE YOUR DISTRIBUTOR . . .

Design, construction and interchangeability are fully illustrated and described in Circular 574. Ask your distributor for a copy or write us direct.

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Fig. 2150
DOUBLE WEDGE DISC, RISING STEM

See Our Exhibit at the 18th National Exposition of Power and Mechanical Engineering. Booth #52, Grand Central Palace, New York. November 29th - December 4th.

FIG. 2153...

Embodies all the features in Figs. 2150 and 2151, but its design is varied to provide non-rising stem operation. Body is the same thus requiring only an interchange of trimmings, to convert from the non-rising stem to the rising stem valve.

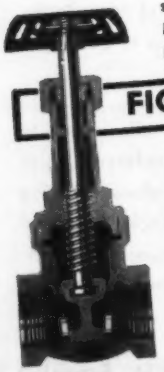

FIG. 2151...

SOLID WEDGE DISC. The solid disc is ideal for services such as food processing lines and handling gummy substances, where entrapment of line materials within the disc is undesirable.

Third TAPPI Engineering Conference

▶▶▶ MORE THAN 350 engineers and technical men recently gathered to attend the Third Annual TAPPI Engineering Conference at Buffalo, New York. Held at the Hotel Statler on October 25-28, this conference featured the presentation of over a dozen technical papers and included inspection trips to the Westinghouse Electric Corporation in Buffalo, The Lockport Felt Company, Newfane, New York, and the Upson Company, Lockport, New York.

J. W. Hemphill, Johns-Manville Sales Corporation, as general chairman of the TAPPI Engineering Division had charge of the program and was aided by the chairmen of the Engineering Division committees as follows: *Steam and Power,* J. E. A. Warner, Robert Gair Company; *Materials Handling,* G. R. Wadleigh, Consulting Engineer; *Drying and Ventilating,* A. E. Montgomery, J. O. Ross Engineering Company; *Mill Design and Economics Aspects,* A. H. Johnson, Alvin H. Johnson & Company; *Mill Maintenance and Materials,* G. H. Pringle, The Mead Corporation; *Engineering Research and Machine Design,* Phillip H. Goldsmith, Pusey and Jones Corporation.

The technical program consisted of six main sessions covering subjects under the committees mentioned in the previous paragraphs. In addition, however, round-table discussions were held in which specific problems were discussed.

On Monday, October 25, the conference was opened by J. W. Hemphill, general chairman, and W. S. Gillespie, president of TAPPI. Then A. H. Johnson introduced A. M. Ball, of the E. B. Eddy Company, Hull, P.Q., who gave a paper entitled "Relationship of Top Management and Engineering in the Field of Paper Manufacturing." The essence of Mr. Ball's paper was that engineering and management must work closely together if maximum efficiency is to be obtained in the development of plant construction or process development. Following Mr. Ball's paper were two papers on materials handling.

The first of these was entitled "Centralized Transportation System for a Pulp and Paper Mill" by G. L. Hawkins, Hammermill Paper Company, Erie, Pennsylvania. He pointed out the many ways to save money by standardizing on the type of truck used and by installing a centralized transportation control system. Mr. Hawkins pointed out that the efficiency of the transportation system depends to a large degree on the design and layout of the plant, condition of the floors, width of aisles and doorways, building location, types of material handled, and other similar factors.

Wood handling costs often have been neglected in favor of many other pressing cost problems about the mill. However, money can be wasted easily by inefficient and incorrect wood handling methods. This problem was the subject of a paper by John A. Willard, Bigelow, Kent, and Willard, Boston, who talked on the general subject of economics of wood handling. He showed that where more than one type of wood handling equipment could do a given job equally well, the individual method should be selected on the basis of economics. This would include initial cost of equipment, upkeep, and operation. It was pointed out that it is not economical to truck wood more than 50 miles. Where distances are greater than this, rail or water transportation should be used. Mr. Willard's main theme was that management should direct more attention to its wood-handling costs.

As is usually the case in meetings of this kind, considerable discussion was provoked. Throughout all meetings of the Engineering Conference this response to the papers in discussion from the floor was gratifying.

The Monday afternoon session comprised a group of three papers. The first paper of this group covered the "Measurement of Slush Stock Flows" by G. Douglas Zimmerman, Fischer and Porter Company, Hatboro, Pennsylvania. Mr. Zimmerman presented a progress report on the development and performance, to date, of a stock metering element, operating on the area meter principle. He pointed out that satisfactory performance is accomplished over the consistency ranges of 2.0 to 3.5.

One of the most interesting subjects of the whole meeting was discussed in a paper by Johan Ricter, A. B. Kamyr, Karlstad, Sweden. His paper outlined Swedish developments in the continuous cooking of kraft pulp. A process has been developed, after about ten years' study and research that takes place in the following stages: Steaming of the chips with evacuation of gases; impregnation with cooking liquor; heating; digestion; and finally blowing. Sufficient time for each of these stages must be allowed. Raw material and liquor must pass through the digester together in such a way that the liquor is exhausted the moment the raw material is digested. Both quality and economy will suffer if this practice is not followed. It must not be exposed to rough handling because fiber strength will be impaired. A number of advantages of this process have been pointed out. Quality of product, economy of the process, and initial installation costs compare favorably with the batch system.

The third paper of this group was presented by F. N. Sanger, Pusey and Jones Corporation, Wilmington, Delaware, who discussed tests of his company's flow spreader. These tests have showed that stock is delivered by this device at uniform velocities across its full width without turbulence.

On Tuesday morning, technical sessions were held at the Auditorium of the Westinghouse Corporation. Arrangements were handled this way so that the inspection trip of the afternoon could be readily accomplished.

Modern steam boilers require treated water and it was on this subject that W. H. Weitzel and D. V. Jones, of the Hall Laboratories, Incorporated, Pittsburgh, gave their paper. This discussion of treatment of water for paper mill use covered more than boiler feed-water treatment. It also covered treatment of water used in the manufacturing process. The factors influencing selection of ultimate treating requirements relative to the finished manufactured product as well as the boiler feed-water make-up needs were discussed.

The importance of selecting the right turbine for a particular job was discussed by J. C. Spahr, of the Westinghouse Electric Corporation. This can be done only if the turbine is selected on the basis of a thorough knowledge of plant requirements. The importance of the control system to a modern industrial turbine was emphasized.

The third paper presented in the Westinghouse Auditorium was entitled "Gas-fired Infrared or Radiant Heat Drying" by G. W. Garland, Dudley, Garland, and Jensen, Incorporated. It was pointed out that radiant heat from suitable gas-fired units offers a means of increasing drying capacity of present paper machines with minimum alterations and installation cost. Operating cost is claimed to be less than that for heat lamps or induction heating. So far, radiant heaters have been used primarily to accelerate drying.

On Tuesday afternoon, after being

luncheon guests of the Westinghouse Electric Corporation, the TAPPI group visited this company's plant, said to be the world's largest plant devoted to the manufacture of the electric motors and industrial control.

The following morning, the technical sessions continued at the Hotel Statler. The subject of the first paper was "Drying of Low Density Fiber Boards in Roller Dryers" by Arthur S. Holden, Jr., the Coe Manufacturing Company, Painesville, Ohio. He told of some fiber board products that are being manufactured from mats first dried in a roller dryer. Low density boards have their moisture content reduced to 60, or down as low as 50 per cent by passing through press sections. The pressed mat must be cut into sheets before feeding it to a multiple-deck roller dryer which may operate automatically. These roller dryers were first extensively used for veneer, but have now been developed for use of fiber boards.

A group of papers on maintenance and materials included the paper "Electrical Cables for the Pulp and Paper Industry" by F. V. Calvert, General Electric Company, Schenectady, New York, and a paper describing the use of cutting and welding equipment by the maintenance department of the Union Bag and Paper Corporation, Savannah, Georgia.

The first of these papers on electrical cables described the selection of proper electrical cables to give the maximum and safe, economical distribution of large blocks of powder. The following points should be considered: Voltage levels, special conditions, new developments in cables, and arrangements of feeders. Special conditions that must be considered involve corrosion and moisture, heating of cables, voltage drop, short circuit capacity of cables. This paper was discussed by E. W. Davis, Simplex Wire and Cable Company, Cambridge, Massachusetts, and by E. E. McIlveen, Okonite Company, Chicago.

The paper by Mr. Jamison Moore, of Union Bag and Paper Corporation, described the equipment and methods used and developed in cutting, welding, and related processes employed at his company's plant. Related processes include metallizing, flame hardening, wrinkle bending and heavy heating. Mr. Moore also discussed a training program for developing skilled welders and maintenance men. He said that lower maintenance cost, due to the use of up-to-date cutting and welding procedures can be achieved by any plant, large or small, if advantage is taken of the techniques now used in many industries.

On Wednesday afternoon six round-table discussions were held simultaneously. These were all well attended, but many persons found they were interested in more than one of the subjects under discussion and moved from one session to another. These round-table discussions were in most cases based on problems and questions submitted beforehand to the committee.

The social side of the meeting was not neglected. The TAPPI dinner on Monday night, presided over by Mr. Gillespie, gave the TAPPI group an opportunity to listen to an address by Rob Roy Macleod of the Buffalo Niagara Electric Corporation, who entitled his address "Where Is the Bright New World?"

Again on Wednesday evening a get-together party and dinner was given at the Hotel Statler, by Westinghouse Electric Corporation. Toastmaster for this dinner was R. S. Kersh, Manager of the Industrial Sales Department, Westinghouse Electric Corporation. A brief address was given by A. C. Monteith, vice president in charge of engineering, Westinghouse Electric Corporation. Concluding the evening's entertainment was an interesting feature, "The Theatre of Atoms." This is a spectacular and educational demonstration that has been given in various places, such as the Grand Central Palace in New York City.

Two interesting plant visits were taken on Thursday, the final day of the meeting. The first of these was to the Lockport Felt Company, Newfane, New York. This visit gave paper mill engineers an opportunity to see something of the problems and processes involved in the manufacture of one of the paper industry's most vital types of equipment, namely paper mill felts.

After being luncheon guests of the Lockport Felt Company at the Lockport Country Club, the TAPPI group visited the mill of the Upson Company, Lockport. After visiting the mill, a reception was held in the company offices where refreshments were served. The group was then returned to the Statler Hotel in Buffalo by the special buses that had been engaged for this day's outing.

TAPPI Testing Division Holds Meeting at Mellon Institute

▶▶▶ THE FIRST GENERAL meeting of the Testing Division of the Technical Association of the Pulp and Paper Industry was held at the Mellon Institute of Industrial Research, Pittsburgh, October 11-14, 1948. The program was organized to give the various committees an opportunity to discuss such subjects as test procedures which are in need of revision, those properties for which a test is desirable, and the development of committee programs.

One hundred and eighty-two attended the sessions and made the conference one of the most successful meetings of the Technical Association.

James d'A. Clark, chairman of the Testing Division was general chairman and opened the session Monday morning. He introduced E. R. Weidlein, diretcor of the Mellon Institute, who welcomed the group, and W. F. Gillespie, of the Gaylord Container Corporation, president of TAPPI. The morning was devoted to discussions of statistical methods by Charles Bicking, Hercules Powder Company, and J. H. Toulouse, Owens-Illinois Glass Company.

In the afternoon, A. S. O'Brien, Eastman Kodak Company, took over the chairmanship of discussion on viscosity, alpha-cellulose, and *p*H procedures. Mr. Clark led a group interested in the bursting strength test, and John F. Campbell, Flintkote Company, had a meeting of the Structural Fibrous Materials Committee. Mr. Wayne Lewis, of the Forest Products Laboratory, outlined several proposed test procedures for structural boards at this meeting.

Tuesday was devoted to microscopy, package materials testing, and optical properties. Thomas Fyfe, of the Eastman Kodak Company, and his group reviewed the TAPPI Standard T 401 m Fiber Composition of Paper. George Sears of the Institute of Paper Chemistry was chairman of the packaging materials session at which tests for water vapor permeability, flavor transfer, gas leakage, cycle tests, heat sealabiilty and pressure sensitive tapes were covered.

The Optical Properties Committee, A. H. Croup, Hammermill Paper Company, chairman, discussed a proposed standard for the measurement of gloss. After coverjng fading instruments and the measurement of clay brightness, Richard Hunter, spoke on the color

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difference meter and recording gloss and brightness meters and Mr. French on the PPGIDL Colorimeter.

There was a session on pulp testing Wednesday with L. V. Forman, the Institute of Paper Chemistry, as chairman. The discussion on dirt count was most interesting.

The Nonfibrous Materials Testing meeting was divided into two parts, the committee chairman, Stephen Kukolich, Lee Paper Company, presiding over the discussion on analysis of paraffins and petrolatum. George R. Sears headed a group on the analysis of rosin size, fillers, and beater starch.

The paraffin meeting lasted all day with H. Shindler, Daugherty Refinery; J. E. Newman, Esso Standard Oil Company; E. R. Wiles, Bareco Oil Company; G. P. Mueller and G. Rumberger, Marathon Corporation; J. W. Padgett, Moore & Munger, and M. W. Kane, of Kalamazoo Vegetable Parchment Company, presenting discussions on such items as sealing and laminating strength, oil content, color, penetration test of microcrystalline wax, flexibility, stability, tensile strength, and blocking resistance.

During the three days tours were conducted through the Mellon Institute by Paul B. Davidson, Senior Fellow, Strathmore Paper Company, and others of the staff and on Thursday a group of about thirty visited the Natrium, West Virginia, plant of the Columbia Division, Pittsburgh Plate Glass Company to inspect the facilities for manufacturing chlorine and caustic soda.

Because of the nature of the problems, practically all meetings were informal discussions and the various chairmen were well assisted by the group.

Two Superintendents Divisions Hold Joint Fall Meeting in Atlanta

▶▶▶ IN ATLANTA (Ga.) the Southern and Southeastern Divisions of the American Pulp and Paper Mill Superintendents Association held their joint fall meeting on October 21-22, 1948. More than 200 superintendents and affiliates registered for this meeting which combined serious technical sessions with social entertainment.

The meeting was opened by Raymond Bennett, Ecusta Paper Company, past president of the national Association. After the invocation by Rev. Vernon S. Broyles, Jr., and a welcoming address by Mayor William B. Hartsfield, of Atlanta, the program was started with a discussion of the Jonsson screen by Sven Falhgren, Bird Machine Company. He stressed its variety of uses, namely in the manufacture of sulphate and sulphite pulp, as a knotter and course screen for groundwood, for screening chemical pulp, and for various other kinds of stock.

The second paper of the Thursday morning session described the Vickery felt conditioner. This was presented by B. E. Warren, Bird Machine Company, who outlined the applications for this type of equipment and described the different models available to industry.

One of the most important factors in operating business today comes under the heading of labor relations. A talk entitled "Labor Relations Within Industry" by Austin Fisher, Fisher Associates, New York City, outlined the objectives of a good labor relations program and discussed the dangers of communistic dominated unions. He showed moving pictures which illustrated the kind of propaganda presented to labor by left-wing unions.

Thursday afternoon's technical session consisted of three papers. The first of these was given by Russell Winget and Harry Gehm of the National Council for Stream Improvement. This paper outlined the activities of the Council and discussed federal legislation regarding pollution of interstate waters.

In the second paper of the afternoon, R. L. Kutter, Black Clawson Company, discussed the theories of stock flow to the paper machine and the operation of his company's Hydronamic inlet. Concluding the afternoon program was a paper by Tany Agronin, Shartle Bros. Machine Company, outlining the operation of various types of stock preparation equipment.

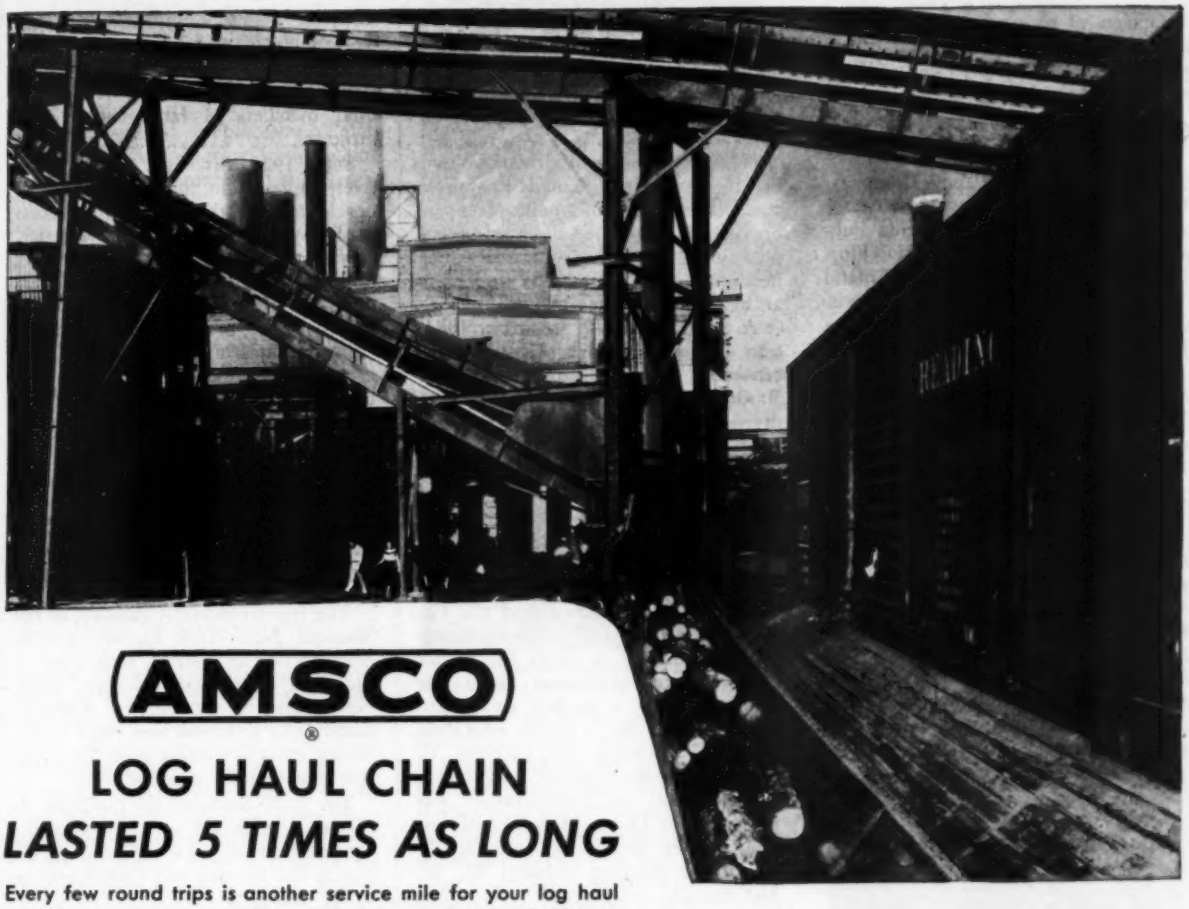
The final technical session of the meeting was held on Friday morning. Main feature of this session was a panel discussion of pulp bleaching. Presided over by F. A. Jensen, chairman of the Southern Division, the panel speakers were Vernon Woodside, Mathieson Chemical Corporation; R. L. McEwen, Buffalo Electrochemical Company; John Schuber, Solvay Process Division of Allied Chemical and Dye Corporation; L. E. Russell, Mathieson Chemical Corporation; and John Noble, Improved Paper Machinery, Inc. No formal papers were given. Various phases of pulp bleaching were discussed by members of the panel.

After the pulp bleaching session, a paper entitled "The Growth of the Southern Newsprint Industry" was given by William McHale, vice president, Southland Newsprint Company, Lufkin, Texas. This was followed by a paper on lubrication by J. H. Hooten and W. B. Shirk of The Gulf Oil Corporation.

Finally, a colored movie was shown which described the methods of pulp wood management and woods operations carried on by the Gaylord Container Corporation. Methods of reforestation, fire protection, and selective cutting were illustrated.

The social side of this meeting was not neglected. A luncheon, with F. A. Jensen as toastmaster was held on Thursday. Speaker for this luncheon was Dr. G. A. Rosselot, director, Engineering Experiment Station, Georgia Institute of Technology, Atlanta, Georgia. He discussed the activities of this institution and its relationship to southern industry.

On Friday morning the International Brotherhood of Migratory Peddlers entertained at breakfast, while on Friday afternoon a golf tournament was held at the Bobby Jones Course in Atlanta. Also on Friday afternoon an inspection trip was taken to the Westinghouse Electric Corporation plant. After a cocktail party, given by the Mill Suppliers Committee, a banquet was held. Toastmaster was Raymond Bennett, while the speaker of the evening was Dr. Josiah Crudup, president of Breneau College for Women, Gainesville, Georgia. Entertainment at the banquet was under the direction of Harry Hulmes. The meeting was brought to a close with an evening of entertainment and dancing.



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Every few round trips is another service mile for your log haul chain . . . every extra mile traveled is another load of logs delivered to the plant. In the large Southern pulp mill shown here, Amsco multiplied these valuable "chain miles" by more than five times . . . delivered over five times the logs handled by previously-used chain.

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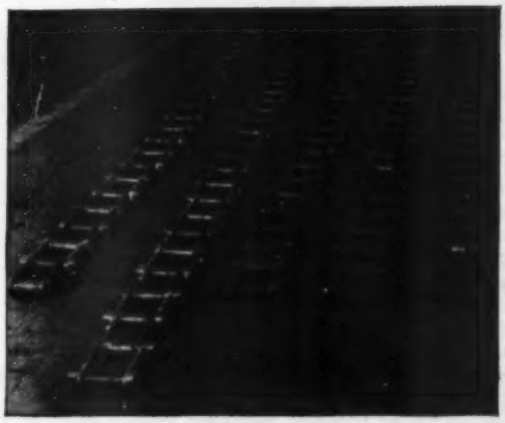

Manganese steel — "the toughest steel known" — withstands shock stresses that fracture other metals. The surface work hardens and under impact and pressure develops a "plowshare" polish that resists abrasive and frictional wear. These properties (plus specially engineered design when required) give you a chain both trouble-free and economical. You can also cut maintenance, breakdown, and wear with Amsco conveyor, drag, transfer, and barking drum chains, sprocket wheels, solids pumps, log-slip liners and other punished parts. Tell us your problem.

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Officers of the two divisions of the association were elected at a business meeting on Friday afternoon. These are as follows:

Southern Division

Chairman—P. J. Hannan, Southern Advance Bag and Paper Company, Hodge, Louisiana; *First Vice Chairman*—Andrew Downey, Florida Pulp and Paper Company, Pensacola, Florida; *Second Vice Chairman*—Roland Wilber, Southern Paperboard Corporation, Port Wentworth, Georgia; *Third Vice Chairman*—Harold M. Morris, Mobile Paper Mill Company, Crichton Station, Mobile, Alabama; *Secretary-Treasurer*—W. P. Newman, Jr., Southern Advance Bag and Paper Company, Hodge, Louisiana.

Southeastern Division

Chairman—Sidney Brown, Jr., National Container Corporation of Virginia, Big Island, Virginia; *First Vice Chairman*—R. C. Bullock, Ecusta Paper Company, Pisgah Forest, North Carolina; *Second Vice Chairman*—Carl Welte, Champion Paper and Fiber Company, Canton, North Carolina; *Secretary-Treasurer*—C. B. Curry, National Container Corporation of Virginia, Big Island, Virginia.

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ANNUAL MEETING OF THE SOC. OF FOREST ENGINEERS

The Canadian Society of Forest Engineers recently held its 40th annual meeting at the Lord Beaverbrook Hotel, Fredericton, New Brunswick. Eric Druce of the British Columbia forest service and president of the society, presided. Approximately 125 delegates from all provinces of Canada attended.

Reports and speeches, covering subjects such as, the manufacture of wood alcohol from waste sulphite liquor, the urgency of conserving forest resources, and the increasing use of mill waste as pulpwood, highlighted the evening's program.

The report of the wood utilization committee, presented by John Jenkins, of the forest products laboratory, Ottawa, said the utilization of bark was commanding increasing attention, but owing to its complex chemistry, the future use of this substance will require fundamental research. The report also stated that Canada's two transcontinental railway systems, the Canadian Pacific Railway and the Canadian National Railway, have requested long-term investigation of the use of laminated railway ties.

Professor A. S. West, of the biology department of Queens University, Toronto, presented the report of the standing committee on entomology. The report underlined the shortage of trained personnel and complimented the creation of chairs of entomology at the University of New Brunswick, the University of British Columbia, and Toronto University.

H. A. Richmond, of British Columbia, the first man in Canada to spray a stand of timber from a helicopter, said his method eliminated the need of airfields near the timbered areas, as the helicopter could be refueled and in the air again within three minutes.

A warning that the present exploitation and destruction of Canada's forests must be halted came from J. A. Brodie, of the timber management division of the Ontario department of lands and forests. A. Koroleff, director of woodlands research of the Pulp and Paper Institute of Canada, warned of the dangers of forest fires caused by enemy action or saboteurs, in the event of a third world war.

The society proposed that the National Research Council and the Canadian department of national defence jointly undertake to study the matter of forest fire suppression under war conditions and a further recommendation urged that a public education program, stressing the necessity of forest fires prevention be undertaken.

The report on forest control was presented by G. L. Miller, chief forester of New Brunswick. Other speakers of the meeting included W. W. McCormack, chief scaler of New Brunswick and chairman of the Maritime section of the society; Mayor Ray T. Forbes of Fredericton, who extended the civic welcome; and Dr. A. W. Trueman, president of the University of New Brunswick.

Section representatives were; Maritime Provinces, E. L. Howie, Edmundston, N. B. Quebec, R. L. Campbell, Ottawa, Dr. C. E. Riley; southern Ontario, J. F. L. Simmons; northern Ontario, G. McCrae; northwestern Ontario, A. J. Auden; prairie provinces, G. B. Gill; British Columbia, Dr. B. C. Griffith, and Vancouver Island, R. G. Telford.

▼

W. C. REIN OF AMERICAN METALLIZING CONTRACTORS ASS'N TOURING ENGLAND

William C. Reid of East Swanzey, New Hampshire, consultant to the American Metallizing Contractors Association, St. Louis, Missouri, is now on an inspection tour of metallizing operations in England.

The trip is the result of an invitation to the American Metallizing Contractors Association from the Metal Sprayers Association of England. While in England, Mr. Reid will observe the operations of several of the world's largest metal spray shops and will witness the execution of several large scale applications of zinc to structural members of large construction projects.

Since 1928, Mr. Reid has been actively engaged in the promotion and development of the metallizing process in Europe, England, South America, Canada, and the United States. During the past fifteen years he has served as field engineer, district manager, and finally as vice president of the Metallizing Engineering Company, Inc. He is retired at present, and is not active in the metallizing field, except as an honorary member of AMCA, for whom he serves as consultant.

▼

W. NEW YORK GROUP OF TAPPI HEARS DISCUSSION ON STARCH IN PAPER MFR.

The regular monthly meeting of the Western New York Group, Empire State Section of TAPPI, took place at the Prospect House, Niagara Falls, New York, on October 13. Approximately fifty technical men from neighboring mills in western New York and southern Ontario attended.

Dr. J. S. Reichert, of Du Pont de Nemours, presided and following the introduction of new officers of the Group the meeting was turned over to G. H. Rand, Jr.

A discussion on the use of starch in paper and paperboard was the main topic for the meeting. Guests of TAPPI who served as a panel group were: J. F. Bullard, Corn Products Corporation; J. P. Casey, Staley Manufacturing Company; Dr. J. M. Newton, Clinton Industries, Inc.; O. R. Steffins, Penick & Ford, Ltd., and J. Strasser, Stein, Hall, Inc.

Dr. Newton in a short speech introduced the subject, outlining in brief the history of starch and starch conversion for papermaking use. Of the several sources of starch, corn, which Dr. Newton characterizes as the most important basic commodity in the American economic system, provides the largest tonnage of dry starch for Industry. The tonnage of dry starch produced reaches the considerable figure of about 1½ million tons annually, but this actually represents only about 1½ per cent of our annual corn crop, the total value of which in recent years has exceeded the wealth produced by all the metal mines, all the coal fields and all the oil wells in the United States.

Mr. Strasser, in commenting on the starch industry, further enlarged upon the importance of corn as a source of dry starch, outlining the relative im-

portance of tapioca, Sago, potato and other starches. Several modifications of corn starch have been developed, he said, to suit it to certain applications where tapioca starches had previously been considered irreplaceable. Potato starch is likewise growing in importance due to the continued shortage of imports of tapioca.

Following the introductory speeches, questions of specific applications of starch were posed by members of the audience and the panel group joined in answering these queries. One topic of general interest was enzyme conversion, with particular emphasis on the effect of different types of conversions and modifications on film strength, adhesive power and working characteristics of the starch solution.

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CHICAGO CHEMICAL SHOW

The National Chemical Exposition sponsored by the Chicago Section of the American Chemical Society was held at the Chicago Coliseum on October 12-16, 1948. More than 21,000 visitors passed through the gates to see the exhibits of some 200 different manufacturers and suppliers of laboratory and process equipment, chemicals, packaging supplies, and other products. Attendance records show that 43 states and 27 foreign countries were represented by visitors at the show.

An important new feature of the Exposition was the Technical Bureau headed by Ward V. Evans, professor of chemistry, Loyola University. Its purpose was to aid visitors at the exposition with problems related to the chemical and process industries. Chairman of the Exposition Committee was L. E. Clifcorn, Continental Can Company, and manager of the Exposition was Marcus W. Hanson.

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COMING EVENTS

Dec. 3—Pacific Coast Division Superintendents Association will meet at the New Washington Hotel, Seattle, Wash.

Dec. 16-18—Society of American Foresters will hold annual meeting at the Statler Hotel, Boston, Mass.

Jan. 11—TAPPI (Pacific Section) will meet in Seattle, Wash.

Feb. 20-25—Annual meeting of the American Paper and Pulp Association and paper groups, at the Waldorf-Astoria Hotel, New York City.

Feb. 20-25—Annual meeting of the Technical Association of the Pulp and Paper Industry, at the Commodore Hotel, New York City.

Apr. 8—TAPPI (Pacific Section) will meet in Longview, Wash.

STATED MEETINGS

Chicago Professional Paper Group meets the third Monday of each month at the Chicago Bar Association, Chicago, Ill. (except July and August).

MATERIAL HANDLING *News*

THESE BUSINESS-LIKE TOOLS do a business-like job THAT BUSINESS LIKES

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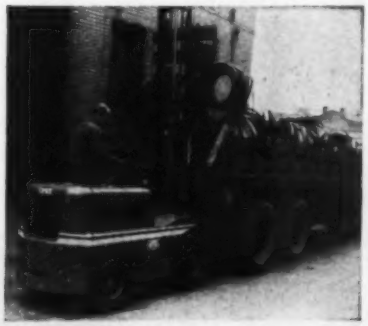
Think of the time saved in loading highway trucks, compared to old-fashioned methods!

As a guide to realization of your own opportunities, investigate these business-like tools that are doing a business-like job that Business likes. You'll find, as we've been happy to find, that users of Clark machines are their most outspoken admirers—that they swear by them because they're really good.



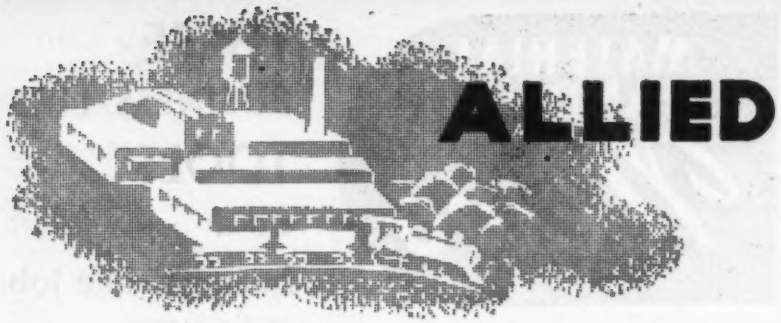
Scrap-disposal is done by means of Clark trucks in a fraction of the time formerly required.

A talk with a Clark field representative will reveal how businesses in your line are making substantial additions to profits by using the Clark Method. It pays—often impressively—to CONSULT CLARK.

CLARK ELECTRIC AND GAS POWERED FORK TRUCKS AND INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIV., CLARK EQUIPMENT COMPANY BATTLE CREEK 22, MICH.
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD
AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

"The National Guard Defends America—Join Now"



BOOK OF FLOW DIAGRAMS SHOWS HOW A-C EQUIPMENT FITS THE PAPER INDUSTRY

An exceptional valuable contribution to the literature distributed to the industry has been released by Allis-Chalmers Manufacturing Company, Milwaukee.

The title of this paper-covered book is Forest to Finished Product, and it portrays, graphically, the particular adaptation of A-C equipment in this industry. The Pulp and Paper Process unfolds like a slidefilm covering the following phases: Woodlot and Sawmill; Power Generation, Distribution, Utilization and Control; Woodroom; Digester House and Wet Room; Bleach Plant; Refining and Paper Making; Groundwood Process; Chemical Preparation; Chemical Recovery for Sulphate & Soda Processes; Sulphite Cooking Liquor Preparation.

Because of an innovation in the make-up of this piece of work, each phase mentioned is illustrated in the form of what may be called a *flow diagram*. The pages are 7 x 11½ and are done in broadside format with double fold simulating a four-page spread. Also unique is the use of color. The flow sheets show the equipment built or supplied by Allis-Chalmers in *blue;* that which can be quoted on and built to buyer's specifications is in *brown;* and that furnished by sources other than Allis-Chalmers is in *black* and *white*.

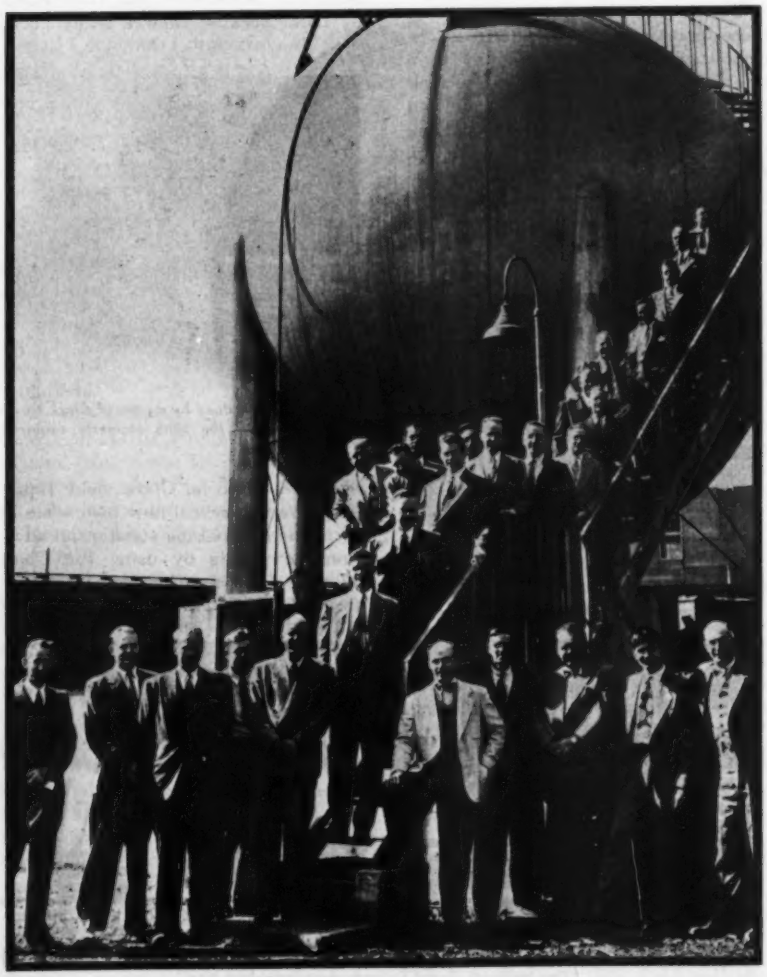
There is a section on Quick Facts devoted to a description of all of the equipment indicated in the flow diagrams, and the whole is adequately indexed.

▼

MICHIGAN ALKALI DIV. OF WYANDOTTE CHEM. HOLDS ANNUAL SALES CONFERENCE

The annual general sales meeting of the Michigan Alkali Division of Wyandotte Chemicals convened September 22 at the plants in Wyandotte, Michigan, to view exhibits and new facilities, and then transferred to St. Clair Inn for two days of round-table discussion.

The opening session at the Wyandotte plant was devoted to inspecting exhibits prepared by the Wyandotte Chemicals Research Department. Particular emphasis was given to new equipment and techniques developed by the department which would be of assistance to Michigan Alkali Division salesmen. One exhibit comprised samples of over a hundred products now in the research or field development stage, evidence of the intensive prosecution of research at Wyandotte.



Some of the manufacturing personnel, sales engineers, and trainees of Wyandotte Chemicals Corporation, Michigan Alkali Division, meeting for their annual sales conference are shown as they visited one of the organic plant installations recently completed

The group then attended a mass meeting of all salaried personnel of the Wyandotte plants, hearing with enjoyment a message by R. W. Carney, vice president of the Coleman Company. At St. Clair, the round-table discussions were opened by W. F. Torrey, senior vice president of the corporation. Question-and-answer periods were conducted by the heads of research, engineering, public business, development and accounting. Thereafter, round-table discussions were carried on by Mel Clark, Howard Roderick, and L. D. Dodson. The closing discussions were conducted by C. S. Johnson and Dr. Paul Burchfield, director and assistant director of technical service.

The banquet which marked the end of the three-day meeting was attended by executives of sales, production,

technical service, engineering, research, development, advertising and accounting. Featured speakers were Dr. Frederick Roos, president of the Econometric Institute of New York, and E. M. Ford, president of Wyandotte Chemicals Corporation.

▼

▶▶▶ RETAINING ITS present New York telephone number, Charles C. Phelps Company has moved its offices from 39 Cortlandt Street, New York City, to larger space in the First National Bank Building, 1 Exchange Place, Jersey City 2, New Jersey. The Phelps Company represents W. H. Nocholson & Company, makers of steam traps and multi-port valves; Ellison Draft Gage Company; Leavitt Machine Company, makers of Dexter valve reseating machines; and Perfecting Service Company, manufacturer of Rotary Unions for admitting steam or water to rotating cylinders.

▼

▶▶▶ OFFICIALS AND SALES representatives of E. F. Houghton Company, Ltd., of Canada, met in Toronto to attend the formal opening of the new Houghton plant at 100 Symes Road. Completed a few weeks ago, the plant is now operating at nearly full capacity. It supersedes manufacturing facilities leased since 1926.

▼

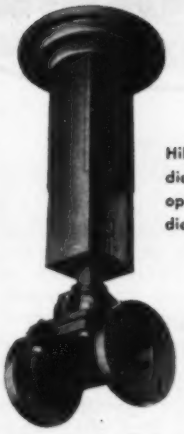
▶▶▶ GIVING "EXCEPTIONAL service in the employment of veterans, both physically able and disabled or handicapped," the Clark Equipment Company received the American Legion's annual service to veterans citation. The company was cited as the outstanding employer in Michigan hiring veterans. Selection of the Clark Equpiment Company was based on the company's program for disabled or handicapped veterans; and was made on recommendation of the Veterans Employment Representative for Michigan. Exclusive of office personnel, the veterans employed number 2,008. Disabled and handicapped veterans represent 10 to 15 per cent of this number.

▼

▶▶▶ ONE HUNDRED thousand free slash pine seedlings will be supplied to landowners for planting this winter by the National Container Corporation, Jacksonville, Florida. These seedlings are provided through the corporation's woodlands division, the National Turpentine and Pulpwood Corporation of Jacksonville.

Your choice of 4 methods of remote valve operation

Hills-McCanna Model 3600 air cylinder operated diaphragm valve with positioner



Hills-McCanna diaphragm motor operated diaphragm valve.

Hills-McCanna Model 3700 air cylinder or water cylinder operated diaphragm valve.

Hills-McCanna Model 5000 electric motor operated diaphragm valve.

HILLS-McCANNA OFFERS a wide choice of valves suitable for remote operation by manual or automatic control. These valves combine the unusual characteristics of Saunders Patent design with tried and proved methods of operation for dependable, trouble-free service in handling a wide variety of corrosive and non-corrosive liquids, gases and semi-solids.

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For air, water, gases, acids, alkalis, vacuum, slurries, volatile and viscous substances, semi-solids, etc. Hand wheel and lever operated—air, motor or chain operated. Rubber or glass linings, or special linings to suit conditions. Cast iron bodies, or corrosion-resisting alloy, Haveg or stoneware bodies. Sizes from ⅜" to 14"

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NAMES in the News

PERSONALS

WILLIAM J. ELKINS JOINS MOORE & WHITE COMPANY

William J. Elkins, wartime army colonel and former engineering consultant to the New York State Department of Commerce, has joined the

William J. Elkins

Moore & White Company, Philadelphia as representative in the New England States and eastern New York.

His first job was with the United Box Board Company, Thompson, New York, where he was in the engineering division. From there he went with the Farnsworth firm of consulting engineers, Chicago and New York, remaining until 1942 when he set up his own concern, Rex Solvents Company, Green Island, New York.

Mr. Elkins, was called by the army in 1942, and served first in the Counter Intelligence Division in Iceland, Greenland and the United States, and then in Aircraft Engineering, holding the rank of colonel. In 1945 he was appointed chief of industrial engineering for Tishman Realty Construction Company, New York City. Two years later he became consultant to the New York State Department of Commerce.

Before joining Moore & White this year, Mr. Elkins was briefly with Syco Manufacturing Company, makers of paper mill drives, in Syracuse, New York.

▼

▶▶▶ The board of Mathieson Chemical Corporation, has appointed *S. L. Nevins* general manager of the company's newly formed ammonia department. Mr. Nevins attended the Missouri School of Mines from which he was graduated in 1920, prior to a year with Monsanto Chemical Company. From 1921 until he joined Mathieson he was with the Southern Acid & Sulphur Company, Inc., where he pioneered a number of new developments.

▼

CHEMICAL DEPARTMENT OF GENERAL ELECTRIC CO. APPOINTS NEW MANAGERS

The chemical department of General Electric Company, Pittsfield, Massachusetts, has named Dr. Charles E. Reed as engineering manager, Robert L. Gibson as assistant to the general manager, and Harry K. Collins and John L. McMurphy as managers.

In his new position, Dr. Reed will have responsibility for new product development, chemical engineering process development, methods and equipment development, facilities engineering and engineering policy. He received his D. Sc. degree at Massachusetts Institute of Technology in 1937. Dr. Reed joined General Electric in 1942 in the company's research laboratory at Schenectady, becoming manager of the chemical engineering division of the chemical department in 1945.

Mr. Gibson, after serving in many capacities in the General Electric Company since 1926, has worked his way up to become assistant general manager of the chemical department. Previous to his new appointment he was manager of the plastics division of the chemical department.

Under the new chemical department organization, Mr. Collins will be responsible for the product engineering, manufacturing, sales and accounting functions for certain products, and Mr. McMurphy will be similarly responsible for others. Mr. Collins has been with the company since 1926, upon graduation from Clarkson College of Technology. Mr. McMurphy joined General Electric in 1930 on the company's training course for chemists and chemical engineers.

▼

▶▶▶ Continuing in the design and sales of special drying equipment, *C. E. Blanchard* has been added to the staff of

C. E. Blanchard

the Boston office of the J. O. Ross Engineering Corporation, New York City. He has been engaged in this work for the past twenty years with B. F. Sturtevant Company. Mr. Blanchard has designed and installed many modernized systems in the rubber and textile industries and is also an expert in special handling conveyorized installations.

▼

STAACKE NEW CONSULTANT FOR HEWITT-ROBINS, INC.

After 22 years on the B. F. Goodrich Company's engineering staff, C. W. Staacke has joined Hewitt-Robins, Inc., as a technical consultant.

Mr. Staacke's duties will include serving as technical co-ordinator of the research and development activities of the company's Hewitt Rubber Division, Buffalo, New York, Robins Conveyors Division, Passaic, New Jersey, and Robins Engineers Division in New York. He is occupying a newly created

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If it is a rugged, heavy felt you need for fine finish in normal production . . . or a lightweight, extra-porous felt for faster drying . . . or an asbestos felt to withstand the advanced temperatures involved in high-speed production of Kraft and other heavy papers — HOOPERWOOD has the felt to fit the need.

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post with the company which is somewhat unique in the conveyor industry because Hewitt-Robins is the only company in the country making the complete belt conveyor.

Mr. Staacke, who received his mechanical engineering degree from Ohio State University, served in World War II as a special consultant to the Army and Navy Air Forces on fuel cell development.

▼

JAMES J. EBERL TO HEAD CHEMICAL RESEARCH DEPT. OF SCOTT PAPER COMPANY

The appointment of James J. Eberl as director of chemical research of the Scott Paper Company was announced last month. His assignment will involve chemical engineering and research, as applied to all Scott paper and pulp mills and he will also be available as a staff consultant. His headquarters will be in the company's main office in Chester, Pennsylvania.

James J. Eberl

Mr. Eberl comes to Scott from Johnson and Johnson where he was director of special products development in the research division. Prior to that he was with the Hercules Powder Company. A graduate of the University of Buffalo, he holds a degree of Doctor of Physical Chemistry.

▼

▶▶▶ Assistant to the President *Frank J. Dvorak,* and Vice President *Roy J. Sund,* have been elected directors of the Marathon Corporation, Rothschild, Wisconsin. *Donald A. Synder,* director of sales, has been named a vice president. Dr. Dvorak, besides serving as assistant to the president of Marathon, is president of the Wisconsin Valley Trust Company, Wausau, Wisconsin.

PAUL F. DICKMEYER ELECTED SECRETARY OF FORT WAYNE CORRUGATED PAPER CO.

At a recent meeting of the board of directors, it was announced that Paul F. Dickmeyer was elected secretary of the Fort Wayne Corrugated Paper Company, Fort Wayne, Indiana. He replaces A. F. Stahlhut, who resigned. Mr. Stahlhut plans to retire from the active duties of secretary only, and will continue to serve as a board member.

The title and duties of assistant secretary previously held by Mr. Dickmeyer were assigned to Albert C. Kanning, who was recently appointed assistant treasurer.

In making the announcement, Harold M. Treen, president, commented that the management feels fortunate in being able to retain the benefit of Mr. Stahlhut's counsel in matters of broad company policy. He has been with the company more than 30 years, during which time he was active in developing the purchasing activities and many operating policies.

▼

▶▶▶ With plants in Erving and Orange, Massachuetts, the Erving Paper Mills has elected *Grafton Houston* as president. He will assist Morris Housen, chairman of the board of directors. David Housen, who has been serving as president and treasurer will now devote all his time to the office of treasurer.

▼

▶▶▶ *Ronald A. Johnson* has been appointed assistant to Paul Brainard, head of the newly created Engineering Standards Department at the Portland, Oregon, plant of the Hyster Company. A graduate of the University of Illinois in mechanical engineering, he has been connected with Hyster's Peoria factory over a period of approximately six years. In his new capacity, Mr. Brainard will work toward standardization of design and materials in the company's three factories.

▼

BOND AND BITZ PROMOTED BY U. S. RUBBER COMPANY

Homer P. Bond has been named district sales manager for the Atlanta, Georgia, branch of the mechanical goods division, United States Rubber Company. He succeeds Harry G. Warren who retired from the company in September, 1948, after 25 years of continuous service. Mr. Bond joined the company in 1925 as a salesman in the Atlanta branch.

At the same time, the announcement was made of the appointment of C. R. Bitz as district sales manager in Birmingham, Alabama. He joined the company's Birmingham branch in 1919 as an order clerk and for the past eleven years has served as assistant district sales manager of the combined Atlanta and Birmingham branches under Mr. Warren.

▼

▶▶▶ At the last meeting of the Board of Directors of the Askania Regulator Company, Chicago, Illinois, *C. E. Tweedle* was elected vice president. Mr. Tweedle first became associated with

C. E. Tweedle

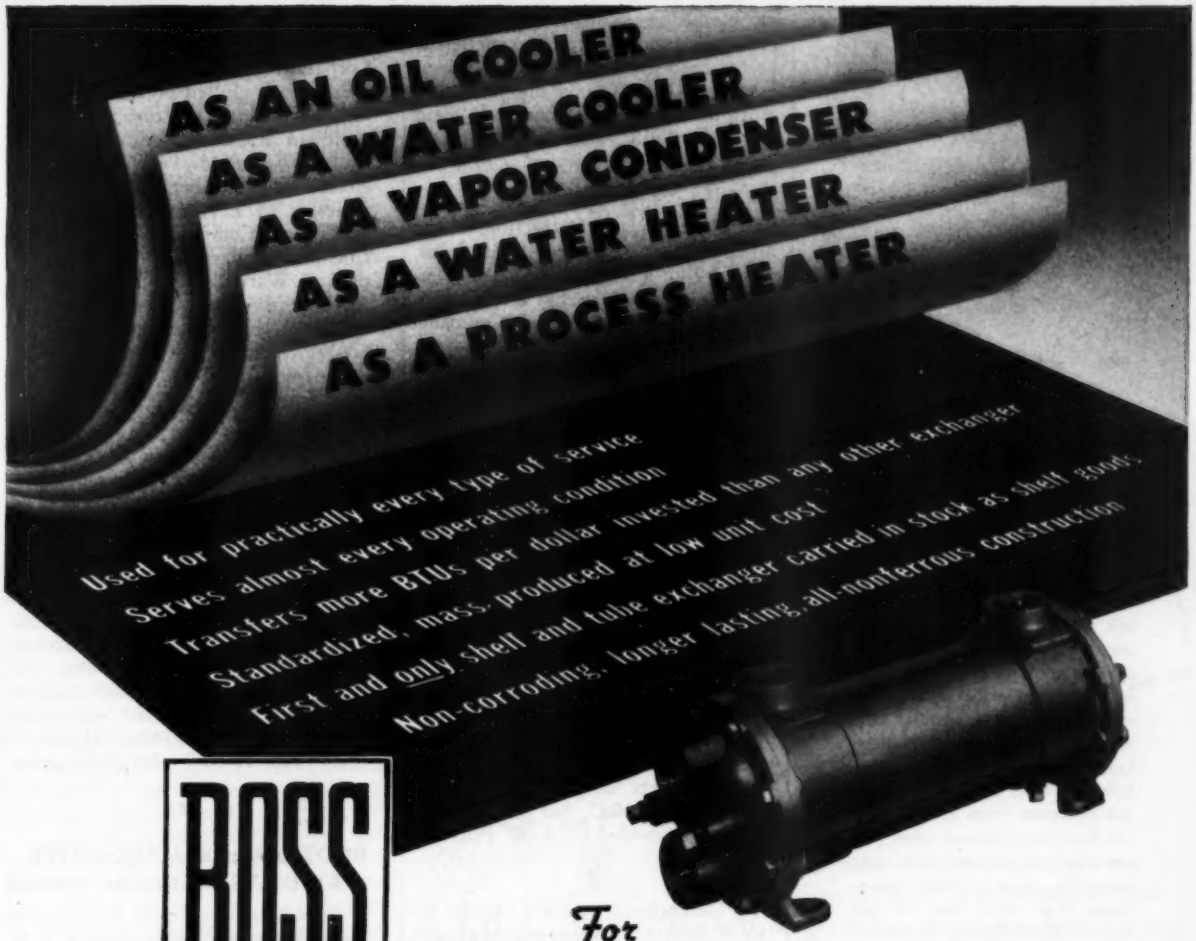
Askania in October, 1946, prior to which he served in the United States Navy. A graduate of the Illinois Institute of Technology, he was engaged in consulting engineering work before the war.

▼

▶▶▶ Retaining his headquarters in the New York office, *Harry P. Smith* has been made assistant general manager of sales of the Mathieson Chemical Corporation, New York City. Mr. Smith was graduated from Columbia with a B.S. degree in 1921. Prior to joining the Mathieson sales department in 1944, he was president of the George Chemical Company. He is a member of the Chemical Salesmen's Association of New York and Alkali Distributors of the New York Metropolitan area.

▼

▶▶▶ Making his headquarters at the New York office, *Carl F. ter Weele* has been appointed export manager of the Farrel-Birmingham Company, Inc., Ansonia, Connecticut. Because of his extensive travel throughout Europe and the Far East, plus his knowledge of foreign economy and market conditions, Mr. ter Weele is well qualified to han-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AS A WATER HEATER
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Serves almost every operating condition
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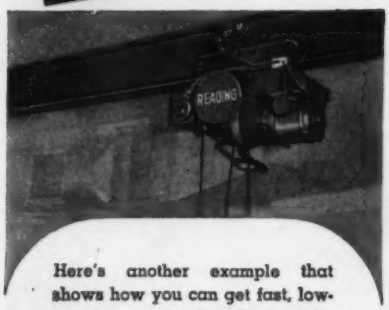
HOW ONE PLANT
Streamlines
MATERIAL HANDLING



Here's another example that shows how you can get fast, low-cost materials handling, right now. Before installing a *Reading* engineered system, this plant had to wheel heavy barrels to the mill via hand trucks. To streamline the operation, *Reading* Engineers were called in. A one-ton Reading Electric Hoist, operating on a built-in parallel trolley, was recommended. Now barrels move faster—less manpower is tied up—and the entire operation costs far less!
Let Reading Engineers give you *practical* suggestions that can streamline your handling operations. Drop us a line for full details. No obligation, of course.

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READING HOISTS

dle Farrel-Birmingham Company's export business. During his experience, he has been associated with such companies as Croca Company, Belgium, Philips-Eindhover, Netherlands, and more recently Remington Rand, Incorporated.

▼

▶▶▶ At the quarterly meeting of the Board of Directors, *Ralph M. Hoffman,* president of Link-Belt Company, Pacific Division was elected a vice president of the parent Link-Belt Company. During his long career, Mr. Hoffman has served in many important executive capacities in both the parent and subsidiary companies. He will continue the presidency of Link-Belt Company, Pacific Division, the position he has held since 1943.

R. M. Hoffman

▼

▶▶▶ A prominent figure in the Canadian pulp and paper industry for 49 years, *Col. C. H. L. Jones,* president of Price Brothers and Company, Ltd., Quebec, since 1937, has resigned. He is being succeeded by A. C. Price.

▼

▶▶▶ Associated with the Central Paper Company, Muskegon, Michigan, for the past twelve years, *Dean H. Strickland* has been appointed to the position of assistant sales manager. Mr. Strickland's duties will consist of assisting E. W. Pitt, vice president in charge of sales, in promoting the company's specialty papers, particularly in field contacts with the company salesmen and the various paper merchants.

▼

▶▶▶ Announcement of the appointment of *C. O. Baetz* as general manager, was made by Gilbert and Nash Company, Menasha, Wisconsin. Mr. Baetz is widely acquainted in the paper industry and was previously connected with the Valley Iron Works, Appleton Machine Company, Castle and Overton and the Fox River Paper Company. During the war, he served two years as an engineer with the War Department.

▼

▶▶▶ The position of assistant eastern sales manager has been created by The Upson Company, of Lockport, New York, as part of its expansion program. The appointee to this post is *H. Roy Walton,* who has been with the company for a quarter of a century.

▶▶▶ At a special meeting of the board of directors of Sun Chemical Corporation, New York, *George W. Ullman* was elected president. At the same meeting *A. C. Horn* was elected chairman of Sun's Executive Committee. *William Recht,* vice president, was elected as a member of the board of directors. *A. E. Horn,* president of the A. C. Horn Company, Division of Sun Chemical, and *Ernest Nathan,* president of Warwick Chemical Company, Division of Sun, were elected vice presidents of the corporation. *Albin K. Schoeph* retired, and *James W. Reynolds* resigned.

▼

▶▶▶ Taking over new duties, *A. J. Link* of Signode Steel Strapping Company, Chicago, Illinois, has been appointed Chicago district sales manager. For the past seven years Mr. Link has held the post of sales representative with headquarters in Indianapolis. In his new duties, he will direct the company sales in Minnesota and Wisconsin as well as the Chicago sales area. Mr. M. C. Carlson, assistant sales manager formerly Chicago district sales manager, will devote his entire activities to the control of field sales organization.

▼

ROOT & McKELA PROMOTED BY DILTS MACHINE WORKS

Dilts Machine Works, Fulton, New York, announces the position of E. M. Root, sales manager, has been broadened to include converting machinery in addition to stock preparation equipment. Jack McKela will serve as sales engineer for both classes of equipment.

E. M. Root (left) and Jack McKela

Mr. Root was given a laboratory position with Dilts in 1937 following a two-year engagement with St. Regis Paper Company, prior to which he was graduated from Syracuse University. After spending two years in the service, he returned to Dilts as a sales engineer. From this position he was advanced to stock preparation sales manager.

Mr. McKela also graduated from Syracuse University, majoring in science at the College of Forestry. He worked summers as a mill hand and

spent approximately four years as control and research chemist with Crane & Company, Dalton, Massachusetts. In the spring of 1947, he became a sales engineer on stock preparation equipment at Dilts. After engaging in a period of intensive sales training in the Shartle Brothers foreign department, he qualifies for sales engineering conversion machinery as well as stock preparation machinery with Dilts.

NECROLOGY

RALPH B. ROE

Ralph B. Roe, well-known paper chemist passed away at Middletown, Ohio, October 6. He was 63 years of age. As technical director of the Sorg Paper Company, Mr. Roe was one of the leading chemical technologists in the pulp and paper industry, and was honored by the government of Sweden in 1943 for his contributions to papermaking knowledge.

The "Roe Number" is familiar throughout the paper industry, a method now universally accepted for the determination of the chlorine requirement of unbleached paper. One of his great accomplishments was the preparation of a design for a complete mill for the Olla Sugar Company of Hilo, Hawaii, a firm employing a new idea for manufacturing mulching paper from sugar bagasse.

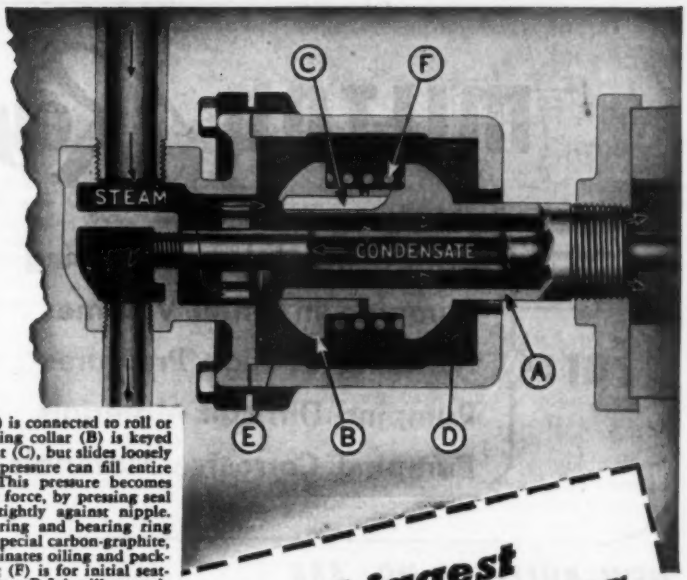
Mr. Roe came to Middletown in 1919, and his chemical knowledge aided the Sorg Company to establish the high place it holds today as a paper manufacturer.

▼

▶▶▶ *John Alfred Wilcox,* 67, process engineer for the Longview Fibre Company at Longview, Washington, passed away October 8 in a Portland, Oregon, hospital, after an extended illness. At the Fibre Company, Wilcox was responsible for the development of special evaporator equipment and other technical processes. Survivors include the widow and two sons.

▼

▶▶▶ Former assistant secretary-treasurer of the Gaylord Container Corporation, St. Louis, Missouri, *LeRoy C. Odell,* 53, passed away October 16 at Colorado Springs, Colorado. Mr. Odell, who had been associated with the Gaylord firm about 23 years, moved to Colorado Springs for his health two years ago. He is survived by the widow, a daughter and son.



Nipple (A) is connected to roll or drum. Sliding collar (B) is keyed to nipple at (C), but slides loosely over it so pressure can fill entire housing. This pressure becomes the sealing force, by pressing seal ring (D) tightly against nipple. Both seal ring and bearing ring (E) are of special carbon-graphite, which eliminates oiling and packing. Spring (F) is for initial seating only. Type B Joint illustrated; other types, sizes for all needs.

...it's the biggest little trouble-saver in the mill...

In terms of physical size alone, the Johnson Joint could hardly be called big machinery. But in its ability to save time and trouble, and promote plant efficiency, its stature approaches anything the industry has ever seen.

The Johnson Joint was designed to go after the old stuffing box and steam fit troubles in a business-like way, and it literally knocks the stuffing out of them. There's no packing of any kind. There's no oiling required, ever. There's no adjusting — the higher the pressure, the tighter the seal. There's little to fear from misalignment—with provision for both lateral and angular movement built right in. Note besides how neatly it provides for more efficient syphon drainage, through the same head that admits the steam.

In dollars and cents, what does all this add up to? Well . . . enough at least to pay the cost of switching over to Johnson Joints in just a short while. Enough certainly to make the Johnson Joint too big to overlook.

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JOHNSON Rotary Pressure JOINTS

THE JOHNSON CORPORATION
845 WOOD STREET
THREE RIVERS, MICHIGAN

MILTON Roy PUMPS

For:
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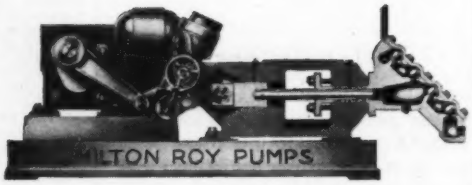
- Pumping at High Pressures
- Pumping Difficult Materials
- Pumping Corrosive Materials



NEW BULLETIN NO. 484

Contains condensed catalog material . . . chart showing capacity-pressure combinations available in Milton Roy Pumps for practically every chemical service . . . also flow sheet illustrating automatic pH control with varying main line rate of flow.

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GEORGE W. HARPER
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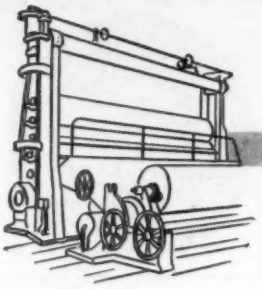
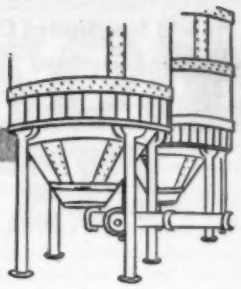


Practical SHORTS



Readers are invited to submit short, practical articles for this department. The items should be original and should relate to ways and means of handling production and maintenance jobs. Where possible, articles should be illustrated. Rough sketches only are required. Payment will be made for acceptable items upon publication.

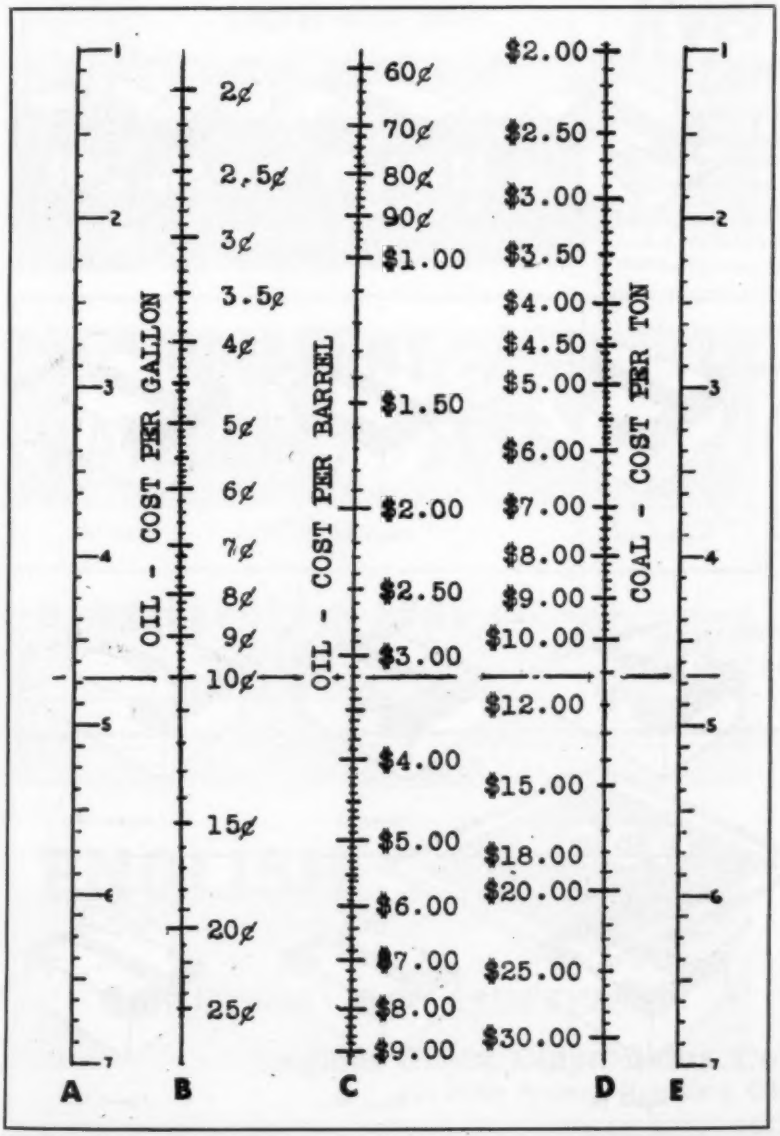
Chart for Coal vs Oil

Shall I burn oil or coal? That problem is bothering most of us more and more. So, the writer prepared this simple chart. Merely run a straight line across, horizontally, from left to right, or right to left, and there's the answer—in column B, C.

For example let us say that your fuel oil costs 10c per gallon. Run a horizontal line thrugh the 10c, column B, as indicated by the dotted line across the chart, and column D tells you that 10c per gallon for oil is equivalent to about $11.10 per ton for coal. Therefore if your coal costs, say, $16.00 per ton it looks reasonable, does it not, that oil would cost less.

Sometimes oil is purchased by the barrel and that is why column C is included. For example, if you pay $3.20 per barrel, the same dotted line tells you that it is equivalent to 10c per gallon, or $11.10 per ton for coal.

The scales A and E are identical, as will be noted. They are made identical to assist in running a perfectly horizontal line across the chart. The dotted line, for instance, runs through 4.68 in column A and 4.67 in column E. It is not "perfectly" horizontal, but is close enough for our purpose.—W. F. SCHAPHORST, M. E.



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Investigation of Unfamiliar Solvents

When a solvent that is new to a plant or shop is introduced, any hazards involved should be fully understood by everyone concerned. Otherwise an accident may result, since improper handling or inadequate precautions may lead to illness or fire or both.

An accident occurred in a plant not long ago when a group of men were assigned to work in a pit under a punch press, using as a lubricant or coolant during tapping, a nonflammable solvent which was new to the company. Because the solvent container was labeled with a warning to the effect that ventilation should be provided, some air was forced into the pit by means of an air hose. No one realized, however, that it was necessary to assure that this would provide sufficient ventilation in terms of the amount of solvent used and the type of place in which the men were working.

The men worked all day without complaint, all but one stopping from time to time, "to come up for air". At the end of the day, two men became ill and one of them, the man who had worked with no interruption throughout the day, died a few days later.

In another plant, employees were given a new paint for use on machinery but were unaware that the solvent in the paint was highly flammable, although the label warned that the material should be kept away from flames. The men applied the paint while a welding operation was going on nearby, and a serious explosion followed.

If the label on an unfamiliar solvent carries warning statements which are not fully understood, detailed information on properties and necessary precautions to be observed should be obtained from the manufacturer before the product is put to use. In many states and cities, such information is also available from the industrial hygiene division of the health or labor department.—SAFETY RESEARCH INSTITUTE.

How to Seal Slotted Cartons when Applying Gummed Tape

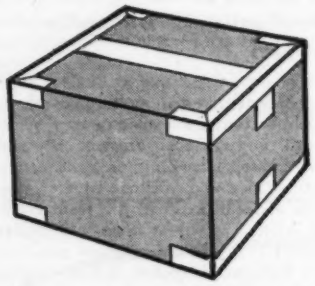
The following suggestions for applying tape are based on a series of motion studies made under actual operation conditions. They are designed to assure palm rubbing —to reduce fatigue in handling cartons.

To seal slotted cartons, apply tape-strip over center seams with a 3-in. overhang on each side of carton. For easier positioning, grasp tape at end nearest machine. Steady the strip between index and third finger until it is exactly centered (Figure 1).

Here is an alternate approved method of taping the center seam which some packers may find more convenient: Apply tape to far flap with flap in vertical position. Then bring flap and tape down to meet the near flap (Figure 1a). Immediately rub down with palm of hand—pressing from center outward to prevent buckling of tape (Figure 2).

Palm should go over the edge of carton to the end of the tape strip in one complete stroke.

Apply extra pressure at the angle to counteract flap tension or springiness which tends to cause tape slippage (Figure 3).



Finished carton, professionally sealed, meets with postal regulations and is delivered in good condition

Without shifting carton, apply strip over right side seam, allowing 3 in lap at each corner (Figure 4).

Rub down full width of tape with right hand, the natural crease of the palm fitting over the angle formed by top and side of carton (Figure 5).

Palm should follow smoothly around far corner (Figure 6). Pinch tape at far corner to form mitre crease (Figure 7). Fold upward and press tape firmly over edge with wiping motion of palm (Figure 8).

Form mitre crease at near corner and smooth upward with palm (Figure 9). Fold over and press tape firmly with palm (Figure 10). Without shifting carton, apply strip over left side seam, allowing 3 in lap at each corner (Figure 11). Rub down full width of tape with left hand, the natural crease of the palm fitting over angle formed by top and side of carton (Figure 12).

Palm follows around far corner. Pinch tape to form mitre crease (Figure 13). Fold over and press tape firmly with palm (Figure 14). Left palm follows tape around near corner (Figure 15). Smooth tape upward with left palm. Pinch tape with right hand to form mitre crease (Figure 16). Press tape firmly over corner using both hands as shown (Figure 17).—*From Gummed Tape User's Handbook*, published by BETTER PACKAGES, INC.

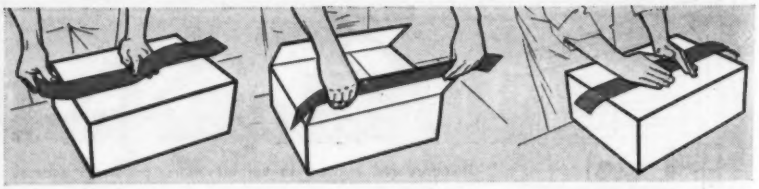


Figure 1 ***Figure 1A*** ***Figure 2***

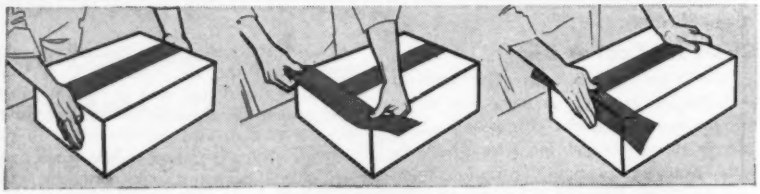


Figure 3 ***Figure 4*** ***Figure 5***

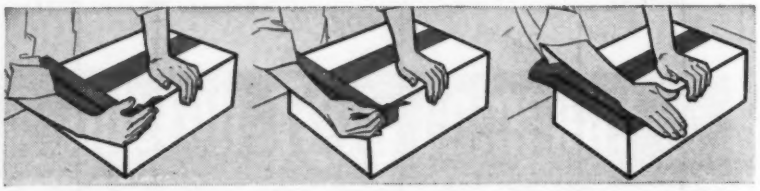


Figure 6 ***Figure 7*** ***Figure 8***

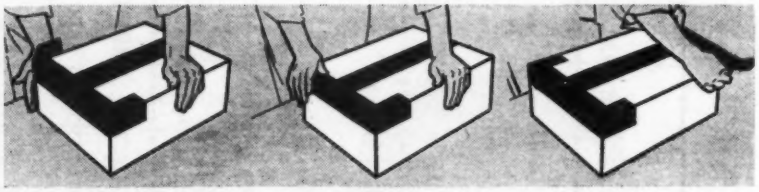


Figure 9 ***Figure 10*** ***Figure 11***

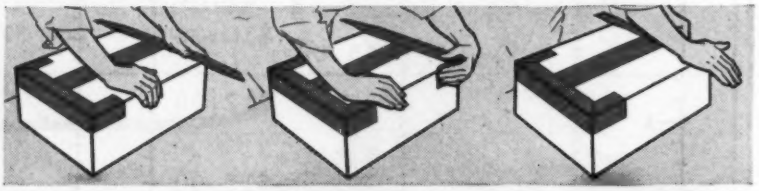


Figure 12 ***Figure 13*** ***Figure 14***

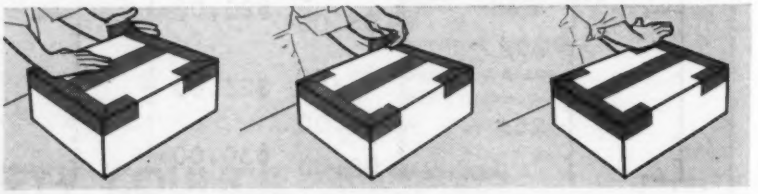


Figure 15 ***Figure 16*** ***Figure 17***

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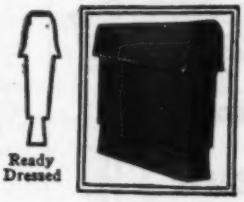

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Convention Papers . . . Abridged

Safety in the Ontario-Minnesota Logging Division

JAMES A. RYAN, Woods Manager
Ontario-Minnesota P. and P. Co., Ltd.

Abridgments in this section are from papers presented before the Pulp and Paper Section at the **National Safety Congress** in Chicago, October 18-22, 1948.

It might be well to first give you a picture of our logging operations—where they are located and a rough estimate of size. Our Fort Frances division extends in an easterly direction for some 92 miles from Fort Francis, Ontario, which is situated on the western end of Rainy Lake, and directly across the river from International Falls, Minnesota, where the parent company, The Minnesota and Ontario Paper Company, operates mills. To the west, the area extends some 44 miles and the westerly tip of this area is located in the Lake of the Woods district.

In the Kenora division where we have two operations, the Lake of the Woods and the Patricia Limits, we have one area running in a southeasterly direction for some 56 miles from Kenora and another area running in a southwesterly direction for some 24 miles from Kenora.

To the north from Kenora we have our Patricia Limits running in a northeasterly direction for some 76 miles from Kenora. These figures are all air miles and all camps in our operations are accessible by plane; some by water and plane, and some by plane, water and highway.

There must be a number of you here who are well acquainted with the general routine that was followed in past years when the time came in the early fall to start getting the camps in for the winter operation. You will, therefore, also recall the general last minute rush to be sure all camps were in before the freeze up came and the lake froze over. You probably stood on a dock and watched the tug boats leave, towing barges of supplies and wanigans filled with men. You had a last few words with a camp foreman, wished him luck and hoped he would have his quota of pulpwood or logs out by spring break up. The boats and barges finally disappeared, you turned and left the dock. Maybe you watched a similar procedure from one of your warehouses. You watched the trucks being loaded with supplies and men and disappear around a corner and head for camp.

The boats and trucks got to the different camps they were headed for, and there was general commotion in getting settled, storing all supplies away for the coming months. There was plenty of foodstuffs. There was all the equipment necessary to work with, and yes, there was also a carton of medical supplies. Yes, and there were a few bandages and some jars of ointment. Another parcel marked "Accident Forms" was also there. Yes, all had been taken care of with careful planning that should see them through till break up.

In a few weeks time, when going over your morning mail, you come across the first camp reports to come in. You scan them closely and are quite eager to see how production is coming along. Things look pretty good and you figure Bob is making a good showing at his camp. There is an accident report in with the mail and you look at it also, and see that one of the cutters has had a bad axe cut to one of his legs while limbing a tree. On reading down further you note that he has been sent to town for treatment. A call to the doctor or the hospital and you are told that it is serious and there will be a long layoff. More production reports come in and also more accident reports. Yes, the production is holding up and all the pulpwood and logs are going to be banked out on time. But how about all these men who have had all these injuries? Some have recovered. Others are still in the hospital. Little Joe may have trouble getting along with one hand now. That was a bad squeeze he got on that king pin hookup on the end of that haul truck. And there is Bill. The boys thought a lot of him. He could really play a fiddle. However, that fiddle along with his other belongings were all sent to his home.

We managed to get our year's supply of wood to keep the plant running but I think we also took too much for granted when it was time to sum up our accident experience. We probably reasoned all these accidents that had taken place in our camps during the cutting season were a must that had to be taken in our stride. We knew the mills were all making a pretty good showing in their accident experience, but, their employees were more stable. They worked the year 'round, year after year. We knew, too, that our woods accident frequency was far too high, more than double that at the mills, and that our compensation assessment rates were also double that of the mills.

We receive information quite frequently in the form of reports. Some of these report are very disturbing. They show that we in industry actually allow more lives to be lost per man day than were lost in warfare. One of the reports I read last August was prepared by your department of labor and industries, division of safety at Olympia, Washington. You have more than likely all read it but I want to refer to one or two facts.

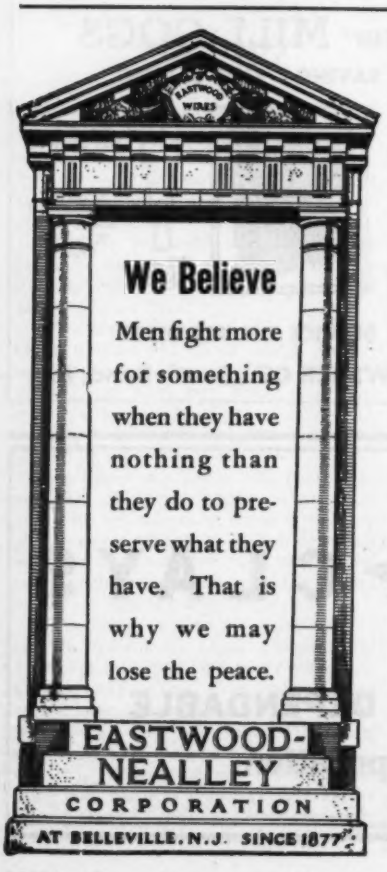
1. Every four minutes of the day someone in industry dies as a result of injury. Think of it—360 employees a day. Since this meeting started today at least two employees have died as a result of injuries.

2. Enough man-days are lost to industry each year as a result of accidents (nearly forty-five million man-days) to manufacture more than fifty million pairs of shoes.

3. And the amount of wages lost to employees each year as a result of industrial accidents would be sufficient to feed, clothe and shelter a city nearly as large as Detroit.

These are alarming figures and they make one wonder if sufficient is being done to try and better our record.

What, then, could be done to improve our experience? We were aware that in a year or two we would start cutting on limits to our north and the operation here would be different in many aspects from our limits on our lake area to the south. We would soon have year 'round roads into our camps to the north. Our operations were fast becoming more mechanized. The day of the tote team was fast being replaced by the truck; the tractors, dozers, sulkies, and many other types of power machinery would also come into use. Maybe the cutter with his saw would be replaced with mechanized equipment. Airplane and seaplane bases were being established in the area. These trends all pointed one way. We were moving ahead along with the times. We were to have better communication facilities. We could drive to our camps soon and if it was necessary we could fly to camps in some areas. We had now experimented with a sea-bee plane for thirteen months and had on three occasions used it to transport injured men from camp to hospital at Fort Frances. The results were sat-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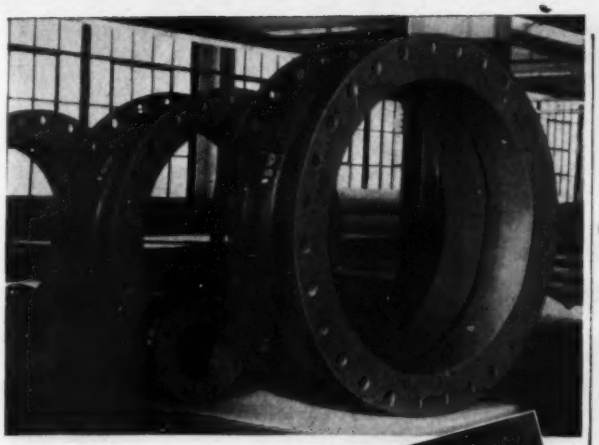

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isfactory, and, after some 400 flying hours, this plane was to be replaced with a De-Havilland "Beaver" early this fall and would accommodate five or six passengers or two stretcher cases if necessary. With its 144-cu ft cabin, considerable material could also be rushed to camps in emergencies.

We would also be taking delivery of two buses very soon, one for our flanders area in the Fort Frances division and one for the Patricia area in the Kenora division. They would seat 23 adults. In the Patricia area this bus would be very helpful also in transporting some 31 children to school in our headquarters camp. Why, then, couldn't we operate the year 'round? It had its advantages and the yearly requirements of pulpwood and logs could be controlled better. Maybe with this improvement in communications we could work in some methods to also improve our services to the camps. It seemed practical and if we could eliminate some of these ghastly accidents we were continuously having there was no doubt it would be well worth while. Our executive officers were anxious to see a decline in our logging accident experience and were willing to go a long way in promoting a program. They had already seen the experience at the different mills drop considerably. Plans were put on paper and after considerable discussion and changes, here and there, it was agreed that we would make a start on a concentrated safety program for our logging divisions.

R. W. Croucher, safety officer for all our operations, was placed in charge of same and would be assisted by his divisional supervisors; F. T. Morrish for the Fort Frances Division and A. E. Minor for the Kenora Division. Field safety assistants would tour the area. They would inspect the camps for hazards and housekeeping. They would go out on the job with the cutters, skidders, loaders, etc., and would watch and instruct on safer working methods. First aid classes would be organized and better and closer follow ups could be maintained with the medical and sanitation inspectors. This work is all being done now and although the results are not yet what is desired there is a definite swing downwards in our accident experience.

Going further with our program and to keep it in line with other improvements introduced into the camps such as diesel electric power units which now affords better lighting and better refrigeration which offers a tremendous help in the kitchens, we also placed an emergency first aid outpost in the headquarters camp of one area. A qualified registered nurse is in charge. She has her own quarters at this outpost and bed space is presently available for three patients. When conditions warrant, same plans are available to increase the bed space. Contact physicians visit the camps at regular intervals and the nurse has contact with the doctors in town by means of FM radio. This service is used extensively on regular scheduled hours of broadcast and has on different occasions been the means of cutting down on cases that would have unnecessarily been routed to town for the doctor's attention. We presently operate 250-watt stations at our Fort Frances and Kenora offices and have nineteen 60 watt portable sets located at different operations including two sets on marine units.

Believing that the medical profession could assist us greatly in determining what should be placed in the camps for treating injuries and minor illnesses we now route all requisitions for medical supplies to them. They check them over and make changes where they deem fit. This service guarantees us that we have a proper and sufficient quantity of supplies in camp to take care of our needs and thus eliminates the infiltration of many patent drugs and medicines into our camp medicine cabinets.

Small compact emergency first aid kits are now being placed on all automotive and marine units. Traveling personnel working between camps and out of head office are being supplied with pocket-size kits which are of such design that refills can be obtained from supplies on hand at any camp.

Adequate and improved types of fire fighting equipment are located at each camp. Fire stations are also maintained at each camp with power pumps, hose reels and the usual array of axes, shovels, etc. Each camp building has extinguishers located at convenient spots as well as fire barrels and sand boxes where practical.

The old piece of sleigh shoe steel which cookees so liked to play tunes on to wake you up in the morning and to sound the time for breakfast, etc., is also gone. In its place a siren now sounds the warning, and other signals are also given out. Camp personnel are instructed in fire fighting and each camp has its own brigade. Ladders are spotted between buildings and roof ladders are maintained on all buildings. In restricted areas in the camps such as power plant houses and oil houses "no smoking" is naturally a must. To co-operate with the forestry department, tailor-made cigarettes are not allowed in the camps during the season of high fire hazard, and fluid lighters are used to replace matches.

As the safety assistant moves around in the area from camp to camp he submits written reports of his findings to the camp foreman. These are discussed and proper corrections are made on the spot as far as possible. Copies of all reports are mailed to the supervisors; and where recommendations are made by the field men, and are not handled on the spot, decisions are made, and new policy is set if necessary by head office.

What is this program going to get us? What results may we anticipate? Will it cut down on the number of injuries? Will it help create still better employee relations? We hope so and see no reason why it should not.

If we can instill into the worker, the employee who does the cutting, the swamping, the skidding, the loading, the hauling, and all the other many and diversified occupations that go into present day pulpwood logging, the thought that we want him to work in a safe manner, and can get him to go along with us, our battle is won.

We all know the axe, so commonly used and so often unsafely used, is still the most dangerous tool we have in our wood operations. We know too, page after page of instructions have been painstakingly written with regard to its proper use, but if we do not follow through and pass this information on to the man using that axe, he is still going to continue to hurt himself with it. Who then should be the one to do this work?

Top executive? Well hardly; they naturally approve the idea and want to see everything possible done to eliminate accidents.

Should it then be the woods manager or his field men the divisional logging superintendents? No! The camp foreman and his assistants, including the strip boss and the field safety man? Yes! These are the men who should instruct. They have everyday contact with the line man. They assign the day's work.

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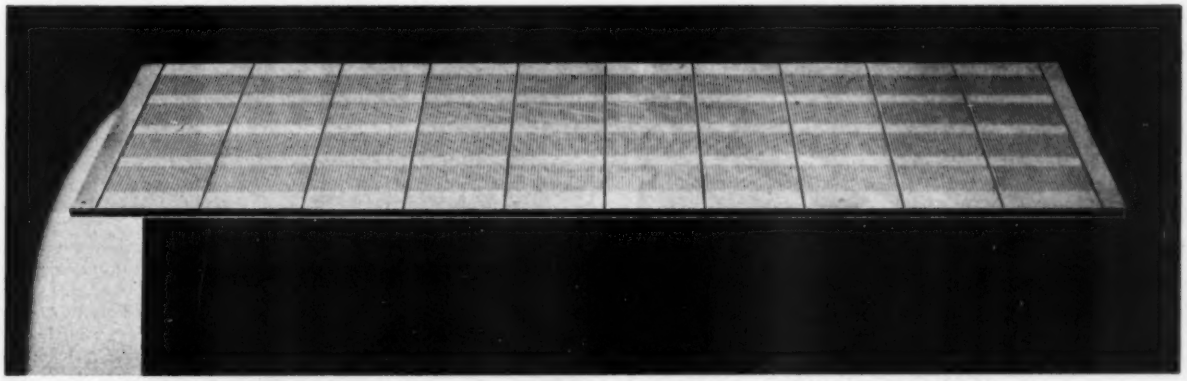

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This is the type of employee we are striving for and we hope we will be able soon to have many more like him, but, it is going to take time, many hours of instruction. We must be patient, we must never give up for a moment. Once you slacken off the interest will drop, and if the interest is gone it will be very difficult to get it back.

Wood Room Hazards

GEORGE S. NELSON
Claims & Safety Mgr.
Consolidated Water Power & Paper Company

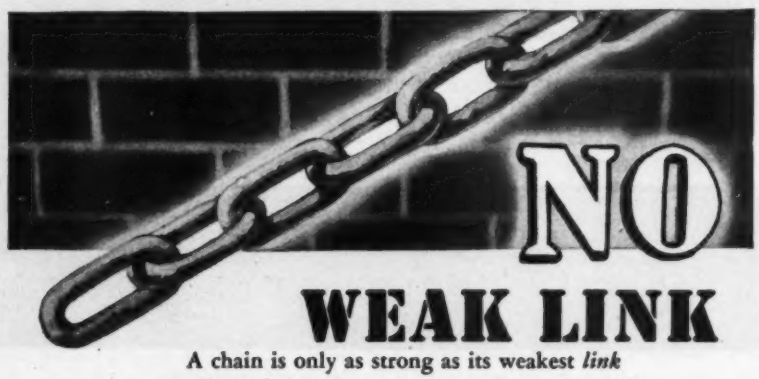
The wood room of the average paper mill has been sadly neglected as far as safety is concerned. A great number of wood rooms are still being operated with overage equipment. This somewhat antiquated equipment was built before safety had attained the prominence that it has in a great many other industries and the prominence that it has attained in other papermaking machinery. As a result, this equipment is either rather poorly guarded or difficult to operate safely unless the operator himself has been impressed with the hazards of his work. The operation of conveyors, slasher saws, barking drums, chippers, etc., naturally create a very noisy condition. The noise itself is conducive to accidents because of the nervous strain that it puts on the employees whether they realize it or not.

For our discussion this afternoon, let us consider these pieces of equipment somewhat in the order of their use in wood room operations and start with the entry of the wood to the slasher saws and the floating of this wood onto the conveyors from the pond. The men who work on the ponds floating the wood to the slashers are to be given sufficient space to avoid injury to their fellow workmen. These men should have room to handle the pike poles and pickaroons. They should be cautioned to wear proper clothing in the wintertime to protect them from the elements and footwear which will give them a secure footing to prevent slips, falls and strains. Shelters or wind breaks should be erected during severe winter to protect them from frost bite and wind burns and in the summertime some protection from sun stroke and heat exhaustion should be supplied. Slasher saw operators should be protected by the erection of a heavy wire screen between him and the saws to prevent possible injury from flying chips, nails, bolts or pieces of the saw which may become broken when they encounter these foreign objects. The screen should be constructed of a mesh which is fine enough to stop these flying articles.

The conveyors which carry the wood into the wood room should be properly constructed with adequate side boards and employees should be prohibited from riding these conveyors to get into the mill. An employee was injured quite seriously several years ago when he ignored instructions regarding the riding of conveyors. Rather than walk around, he stepped onto the conveyor and in a stooped position rode under a low doorway into the wood room. As he reached the end of the conveyor he lost his balance and was unable to step off from the conveyor before it reached the end of its run. As a result his foot was forced underneath the deflector bar and pinched between the bar and the moving conveyor plates. A broken ankle resulted in several weeks loss of time and a slight permanent disability.

The employees who work on the sorting conveyors in the mill should be properly spaced and properly instructed in the use of the hand tools and in the handling of wood to avoid injury to themselves or companion workers. We find that it is difficult to keep these men spaced far enough apart and that they have a natural tendency to work in a group close together so they can converse with each other. This results in injured hands when two men attempt to throw blocks of wood at the same time. We find that many men have a natural tendency to handle pickaroons improperly. We discontinued the ring handle type pickaroon a good many years ago because the workman was unable to control it as it should be. Too often the man's grip became loose on the handle and the point came on around and caused a severe puncture wound in his forearm. Even with the straight handle type of pickaroon we find that too many men are prone to swing it in an arc in such a manner that a continuation of the arc is in a direct line with their feet. If the operator should miss the block or if the pickaroon should glance off from a knot it was very apt to injure a foot or leg. An attempt should be made to teach these men to follow through with their hand in such a manner that if they should miss the block or if the pickaroon should glance, that it will continue on harmlessly and not injure them.

Barking drums should be completely guarded at the feeding end and also have chain drives, etc., completely guarded. Men should not be required to work in such a position that it will be possible for them to slip and be thrown into the barking drums. This may seem elementary but it is not too many years ago that an incident like this occurred in one of the paper mills which resulted in a man's death. No one will ever know exactly what happened because no one saw him enter the drums but evidently he slipped and in some manner fell into the revolving drum. His absence was not noticed until shreds of clothing began coming through at the discharge end of the drum. This probably could not hap-



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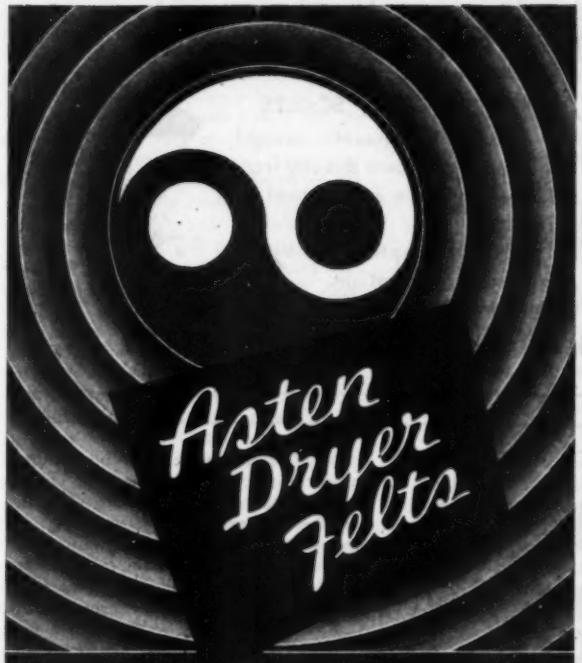

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pen now but it is mentioned just in case some of you may have barking drums which are not adequately protected.

The wood room probably requires more guards than any other single department in the mill and it requires quite a little of the inspector's and foremen's time to check on these guards to see that they are not removed, misplaced or damaged. However, a review of the statistics in wood room operations show that the wood room is no different from any other department as to the cause of its accidents. Less than 20 per cent of the accidents are caused by the failure to have a guard where it is needed. The other 80 per cent of the accidents are due to human faults and peculiarities. We have found that certain persons cannot work in the wood room because of allergies. If they are permitted to work in or around certain types of wood they develop a dermatitis and as a result lose a great many days from the job. Among these are hemlock poison, poison ivy, poison oak and skin rashes from working under damp conditions. Poison ivy is not so prevalent but there is a possibility for a person to contact this skin ailment by handling wood which has in turn been harvested from an area adjacent with the plant. Some preparations are available as a precaution against the contraction of these ailments through the use of protective creams, protective clothing, etc. It is difficult to get men to wear protective clothing in the hot summer months and at these times the protective cream may be the best preventive.

The wearing of goggles and protective equipment should be a mandatory rule in wood rooms. Toe guards and shin guards should be a requirement in the wood bins or in the handling of blocks in any place where there might be a possibility of dropping them on the toes.

Even with all of these guards and protective devices, accidents will occur in the wood room the same as in any other department unless supervisors and foremen in a supervisory capacity are convinced of the importance of safe habits. New employees should be properly instructed by their foremen and should be followed regularly in their methods of performing their duties. Back strains and hernia caused by lifting are preventable only in this manner. Many of you undoubtedly have foremen who have been in the wood room for a great many years and it is difficult to impress upon them the importance of teaching the men under their control how to lift properly and how to do the many other jobs with safety to themselves and to their cohorts. A great many of the men in the wood room are fellows that are advancing in age and with a combination of an old employee as supervisor, you oftentimes get the argument that "We have done it this way for 10 or 20 years, I can't see why we should change now." It may be a rather drastic move to make, but it will oftentimes pay the company to transfer this foreman to a job of less importance if he cannot be convinced that there is a proper way to do things safely and that the old methods are actually the cause of his bad frequency rate. This statement, of course, enters into the controversy of foremen vs. safety committees for accident prevention. The reference should be changed to apply to individual policies.

At one time we had considerable difficulty with the large logs received from the timber division because of protruding knots and the projecting butts of the limbs. Because of these projections it was difficult to handle the logs on the conveyors and the men were subjected to undue strains. They were obliged to walk across the conveyor on the logs in order to straighten them out or twist them over with cant hooks to line them up with the saws. The only remedy for this, of course, is to get this co-operation of the timberlands employees to properly trim the logs before shipping them to the mill. This was accomplished and we had no further difficulty from that source.

Another item that bothered us considerably for awhile was the throw back of chips through the feeding spout to the chippers. At times when the spout was empty the chips were thrown back with great force and made it quite hazardous for the operators. This has been remedied by putting baffles in the spout. These baffles are so constructed that the wood will force them down while going through the spout but when the wood has passed the baffles will resume a position to stop the chips from flying through the mouth of the spout.

We also found that in changing from soft woods to hard woods the wood room employees were oftentimes injured with the pickaroons because they had not anticipated the change from one to another and did not exert enough force on the swing of the pickaroon to imbed it in the hardwoods.

The overhangs in the wood bins also require constant attention because of the danger to the employees in not observing that they are producing an overhang and thereby exposing themselves to falling material. We, of course, insist upon employees in the wood bins wearing shin guards and metal foot protectors. We believe that safety shoes in themselves are inadequate in a wood bin because of insufficient protection. A person working in the location requires protection over the entire foot and quite often protection of the entire leg.

We have instituted a regular inspection of conveyors to check for sharp or protruding edges and the conveyors are checked at least weekly in order to avoid these hazards.

One of our employees was injured a few months ago when he was struck in the hip by the point of a pike pole. Upon investigation we found that this particular man wanted his pike pole for his personal use. He hid it at the end of every shift so that other workers would not use it. The hiding place was beneath the return plates of the conveyor, and on the particular morning of the accident when he went to get the pike pole out of its hiding place, he reached in and started to remove it by pulling the point of the pole towards him. As he did so, the handle of the pole became entangled in the return plates of the conveyor and thrust it towards him so fast that he could not get out of the way. The pike hit him in the hip and caused a serious puncture wound. Had it hit him in the pit of the stomach the injury would have been much more serious. We, of course, took immediate steps to prevent the men from hiding their pike poles and issued instructions that all poles are to be put on the rack at the end of the shift.

A great many hand injuries are caused by inattention on the part of the sorters while working over the conveyors. They oftentimes do not remove the blocks promptly or through their inattention hold the block on the side of the conveyor long enough to allow the oncoming wood to pinch their hands between the two blocks.

Wet slippery bark is an ever present hazard of the wood room and can only be controlled by a continuous cleaning process. Wet bark should never be allowed to accumulate on platforms or work areas. In our plant the cleaners are responsible to one central cleaning foreman. They are not responsible to the department foreman but are

assigned to certain jobs within that department. In this manner we are assured that a department foreman will not reassign one of his cleaning men to a production job at a rush time. When we assign a man to cleaning up the bark we know that it will be done and do not have to worry about the department foreman taking it upon himself to reassign him even temporarily.

There is also a considerable hazard in handling the saws which are being taken from the saw filers back to the slashers. It is generally understood that these saws shall be carried only in a frame which will allow the men to handle them without danger of being cut by the sharp teeth.

While a great many advances have been made in wood room operation, there is still a lot of room for improvement and so in conclusion I would like to suggest that the Pulp and Paper Section of the National Safety Council should look into the matter of more improvement and advancement in safety in the designing of this equipment. This probably could be accomplished through contacts with the manufacturers of the equipment and their designers. This we realize will only involve a small percentage of the accidents which occur in the wood room but it does involve the ones which are more serious. The greatest proportion of the accidents, that is, those which occur from mishandling tools and equipment and in unsafe practices, are a responsibility of the individual plants and, therefore, a challenge to the safety directors to carry on a stronger program of an educational nature in that department.

Hazards Encountered in the Chemical Pulp Industry

RUSSELL CHAPMAN
Supt. Electrolytic Bleach Plant
Howard Smith Paper Mills, Ltd.

Sulphite Process

Sulphurous-acid Plant. Handling Limestone from cars or trucks to dumps involves some handling unless it can be dumped by gondola cars on dump trucks. If required to throw it over the sides and stones are of a size with weight running up to 100 lb., this calls for protection of the workers in the way of foot and shin guards along with heavy gloves. Right lifting and stance are very important and often hard to accomplish when standing on and between the rough stone, hence the ever present hazard of back strains and hernia. These conditions are aggravated under winter conditions and call for workers of rugged physique and close supervision.

Getting the Limestone to the Top of the Absorption Towers calls for manual handling from the dump to the conveyance whether it is a skip hoist or a narrow gauge rail car and the same safety precautions have to be taken. Where the latter type of car is used and elevated to the top of the towers with a standard freight elevator, care has to be taken to see that car is blocked to prevent movement and the possibility of stone being dropped down the shaft. Dumping of the stone into the towers does not present any great hazard but the operators when removing the covers must exercise care in making sure the gas is syphoned or exhausted away from the opening before lid is raised and that they do not fall into opening. Some mills enforce the wearing of a safety belt when doing this job. Two operators equipped with gas masks should be on hand when covers are removed or replaced, should any person required to work in this area, and a mask should be carried on the acid tower elevator at all times as a safety measure in the event of elevator being hung up between floors due to power failure or other cause and a ladder inside the elevator shaft should be provided for the same contingency.

Breaking Down Stone, Cleaning and Repair Work Inside Stone Towers calls for special precautions to see that all acid and gas lines are blanked off and that tower is washed out and well ventilated before workers are allowed to enter. Taking out and relining towers is a special type of work which I will not touch on at this time.

Sulphur Burning—Preparing sulphur for burning either in powder form or in molten state calls for precautions to prevent dust explosions or fires. Care must be taken to prevent tanks holding molten sulphur from overflowing as they are usually elevated above the operating floor.

Unplugging pipes conveying molten sulphur with compressed air, operators working on sulphur lines, valves or tank outlets should wear protective clothing such as brimmed hat, rubber coats, pants and boots with pants over the boot tops, along with gloves, eye and face protection.

Sulphur Storage and Handling has been very well covered in Industrial Data Sheet D-P.P.-5.

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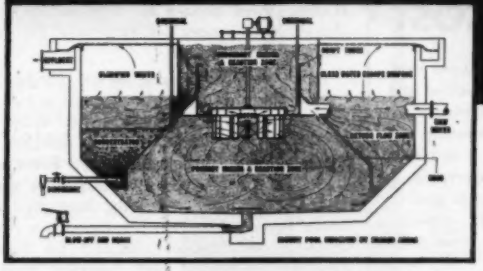

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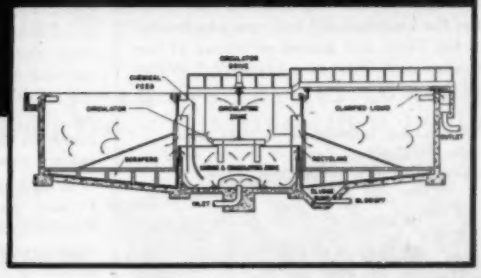

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Cleaning Acidmaking Equipment—burners, coolers and fan—is done during a shutdown period and does not present any special hazards unless burners are still hot.

Acid Storage Tanks—Where wooden tanks are used, they call for careful checking and maintenance to prevent hoops being corroded to a point where tank could collapse. Also that a breather pipe be provided and kept clear to prevent the cover lifting as it can freeze up on shutdowns. The release of a large volume of gas in either case might have serious results.

Tank Cleaning and Repair—Before operators are allowed to enter, tanks to be well washed and ventilated. All connecting pipe lines to be blanked off. Persons entering to be equipped with gas masks and safety belt with fellow employees on watch at manhole until conditions inside have been established.

Digester Operations call for careful thought and handling by the cooks and their helpers especially when operating steam, hot acid and gas valves to make sure they are right. Filling the digester with chips often necessitates men going into the bins to breakdown an arch and if steam is used for this same purpose make sure it is shut off before entering bin and that the men are equipped with safety belt and rope. One man should not be allowed to work alone at this, there should be a second person above bin to render assistance and give an alarm in case of need.

Blow Valves to be kept locked during the cook and key in the cook's possession except when he hands same over to helper at blowing time. It is the helper's responsibility to make sure the hand plate is bolted down and that there is no water or acid in blow pipe also that he has notified the blow-pit man and checked to see that pit doors have been closed. Inspection of digesters for faulty linings or plugged and damaged fittings which is often done between cooks by "coming up on the chips" calls for the tagging of all valves or lines connected to the digester or else blanked off. All personnel in digester house advised and those entering boiler to be equipped with gas mask and safety belt with a watch posted at the opening.

Blow-pits Doors to be battened down before blow after checking to see that no repair men are in pit. All persons working in vicinity of pit to be advised to keep clear due to fumes. Pit openings to be guarded in such a way that persons cannot fall into them. Equipment used for descending into pits such as ladders to be carefully inspected due to action of acid, hemp rope ladders especially.

Where high pressure water hose is used to wast stock out of pits it is advisable to harness same to prevent injury to operator when working through pit openings. Open drains in blow-pit room to be covered to prevent stepping into hot blow liquor. Wooden platforms and steps are usually wet and very slippery if not covered with old felt or other types of matting.

Knotters, Screening, Rifflers and Filters—Slippery flooring, stair, flow-box covers and planking present the ever present hazard of falls, especilly when pulling horse for washing purposes. Felt or other non-skid material can be used to good advantage along with rubber boots that have unworn tread.

Washing up flow-boxes, screens, etc., has some hazards such as the raising of heavy wooden covers which are usually slippery and should be provided with handles or ring bolts where practical. Where flat screens are used the raising of same for wash-up and repair calls for careful handling and should be blocked up before working under or around same in addition to the tackle used for raising.

Bleaching—using hypochlorite and chlorine gas in one or more stages demands good ventilation to exhaust fumes from the working area. All operators to have their own gas masks and located where handy for quick use. Control valves for chlorine to be readily accessible and all lines well marked with distinctive color scheme, exits provided for quick retreat in event of gas leaks, with an alarm system installed for warning all operators in the area involved. All operators in this department to be well trained in the safe handling of chlorine gas and the dangers of same. This is covered by Safe Practices Pamphlet No. 71.

Where caustic or milk of lime are used for *p*H control, the necessary precautions are called for in handling same, these are also covered by Safe practices pamphlet No. 25.

Lapping Wet and Drying Pulp

Lapping of Pulp from wet presses calls for uniform size of laps and proper building of loads to prevent strain from overweight, and toppling over loads when mov-

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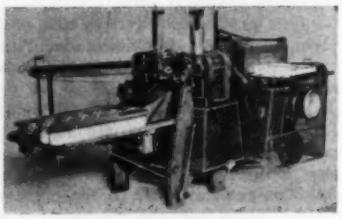

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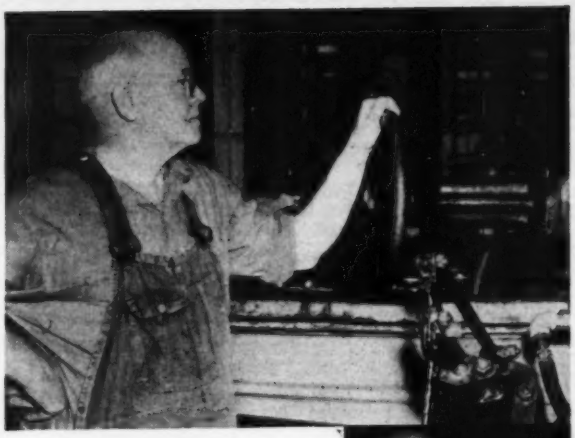

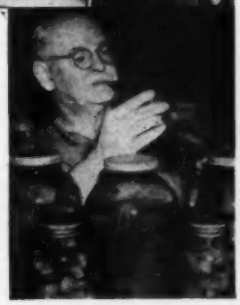

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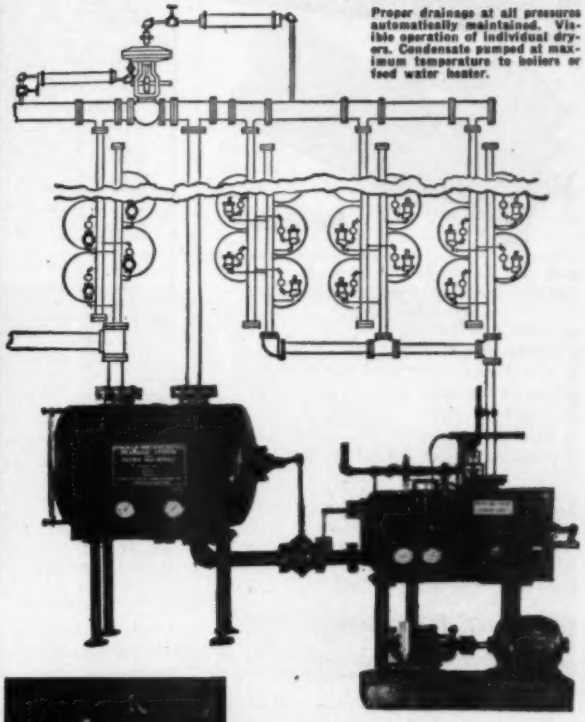

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of The Paper Industry and Paper World, published monthly at Chicago, Illinois, for October 1, 1948.

State of Illinois, County of Cook, ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared A. Scott Dowd, who, having been duly sworn according to law, deposes and says that he is the business manager of THE PAPER INDUSTRY AND PAPER WORLD and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editors, and business managers, are: Publisher, Fritz Publications, Inc., 59 East Van Buren Street, Chicago, Ill.; Editor, Besse Merrithew, 59 East Van Buren Street, Chicago, Ill.; Editorial Director, Richard W. Porter, 59 East Van Buren Street, Chicago, Ill.; Business Manager, A. Scott Dowd, 59 East Van Buren Street, Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member must be given.) Fritz Publications, Inc., 59 East Van Buren Street, Chicago, Ill.; Mrs. Annie C. L. Fritz, 6801 South Crandon Avenue, Chicago, Ill.; Mr. A. Scott Dowd, 6801 South Crandon Ave., Chicago, Ill.; Miss Abigail C. Bruce, 2446 Oak Park Avenue, Berwyn, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, give the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also, that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of his publication sold or distributed, through the mail or otherwise to paid subscribers during the twelve months preceding the date shown above is (This information is required from daily publications only.)

A. SCOTT DOWD,
(Signature of business manager.)

Sworn to and subscribed before me this 24th day of September, 1948.
[SEAL]
THOMAS H. STEVENS, Notary Public.

My commission expires June 24, 1951.)

ing same for car loading or piling. Floor conditions in wet-press rooms call for close inspection and repair due to heavy loads and wet conditions.

Drying Pulp involves the ever present hazard of having fingers caught in the nip or burning arms or hands on the dryers when passing the sheet. This is a recognized hazard and calls for proper training and alertness especially when breaking in new operators or spares for holiday relief. Catwalks, steps, hand holds, etc., should be located in the most convenient way for practical operation and made safe as possible to prevent slipping. All broke to be picked up around wet end to prevent slipping or tripping on same.

Baling Presses, Handling, Piling and Shipping Baled Pulp—Where bales are wired after pressing and outside of the press, operators should wear eye protection to prevent injury from wire ends.

Bales should be carefully made of uniform size and closely wrapped, carefully piled and leaning away from aisles to prevent falling. Mechanical methods for handling, piling or loading of baled pulp are usually followed being more economical and safer. When piling bales in car doorways make certain the tiers facing entrance are chocked to prevent falling forward when car is rocked by loading truck. If cars are shunted during loading process, warn loaders to keep out of them as tiers may topple over. Braces sometimes used. Car plates and gangways to be of sufficient width and securely anchored.

Soda Pulp Process

Alkali Recovery—In soda and sulphate mills the make-up and recovery of the chemicals used for cooking present much greater hazards than in the sulphite mill. Caustic soda as a heavy chemical has to be treated with respect being a very strong and active alkali. Where this chemical is shipped into the mill in tank cars, or in drums as solid, it calls for careful handling. Both handling and unloading caustic cars are covered by Safe Practices Pamphlets 25 and Chemical 3 & 4. Where liquid caustic is received at 48 deg. it is usually added to the causticizing process and becomes diluted and is handled at the lower strength; however, as green liquor, white liquor or black liquor, it is still caustic soda from the standpoint of a chemical hazard and the fact that it is being used at elevated temperatures only adds to the need for greater care when working with it. Operators must protect their eyes above everything else but it also calls for the wearing of rubber clothing when in an area where there is any leakage from tanks, pipe lines, pumps and other equipment also on clean-up and repair work. Where soda ash is used as the make-up alkali, there is not the same hazard in handling except the eyes and lungs need protection.

Lime Handling—A good many mills are using burnt lime for causticizing and this has to be unloaded from box cars or trucks into the mill. It is a disagreeable job but not hazardous if the necessary precautions are taken even in the summer months. The right type of men should be picked for this work as some just can't take it for one reason or another such as tender skin, sinus or respiratory condition. Dust masks made from layers of cotten batten between cotton gauze are very light to wear and the pad can be renewed often.

Where subject to rubbing forearms on front of thighs when shoveling and causing irritation, or where burning starts due to perspiration, a coating of petroleum jelly is very effective.

Generally speaking, persons with fair complexions are not lime handlers.

Lime Burning and Slaking—The hazards connected with these operations are mostly burns caused by hot lumps or powder from kiln or splashing from hot milk of lime. There are points in any liquor recovery system where operators have to guard against hot material or equipment. The eyes are their first consideration and should always be protected. Deluge showers at convenient spots in the liquor recovery builds are recommended. Operators should wear wide brimmed hats and have rubber clothing always available.

Liquor Burning—Whether in rotaries or furnaces this operation calls for care on the part of the operators and the necessary precautions against coming in contact with hot equipment. Eye protection is very necessary when working around the smelt or black ash.

Furnace and rotary rooms are dusty and the alkali accumulates on pipes, beams, etc. When disturbed, it is not good for the eyes or down the back of the neck.

Plugged pipe lines are a usual occurrence on these types of liquor, and operators need

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thorough training in handling these emergencies with full consideration for the safety of themselves and others.

Cleaning of smelt and black-ash tanks has its hazards and calls for close supervision especially where men from a general labor pool are used and are not familiar with the danger from caustic burns.

This would apply to any tanks or equipment being cleaned around the liquor recovery system, such as boiler breachings, scrubbers, de-gasing tanks, precipitators, etc.

The Accident Prone Can Be Helped—a Simple Approach

C. L. R. DOUGHERTY
Assistant Manager, Union Bag & Paper Corp.

In the early part of this year one of our superintendents was reviewing his department's recent safety record. His close analysis of the accidents showed that it would have been a dandy, if it weren't for the accidents of one man. The records showed that this man got hurt often and the superintendent felt that possibly the proper thing to do was to transfer him to low risk work—just as soon as he got out of the hospital and recovered from the broken leg he suffered on the job the month before.

To be sure of fairness in judging this man, his entire past record was searched and it showed that he got hurt each eight months. He had been injured 17 times during his 12 years at our company. The other workers in his crew doing exactly the same tasks as he had under the same conditions, day in and day out, had put in 25 years with only three injuries. Argument with such simple figures seemed impossible. Joe was accident prone.

His superintendent felt in spite of his serious failure in safety that he was a profitable worker to the company. Having this in mind, the safety department started casting about for a way to make Joe an all-round efficient worker by improving his safety record. The National Safety Council came through with the published material on accident proneness and stimulated us to approach the problem.

We studied the individual safety records of our 4,600 people and segregated those who had suffered as many as three injuries requiring a doctor's attention in the period 1945-47 inclusive. The record of each such employee was then searched back to the time of employment and the number of accidents, as defined before, per year was found. The ten workers with the most accidents per year were thus discovered.

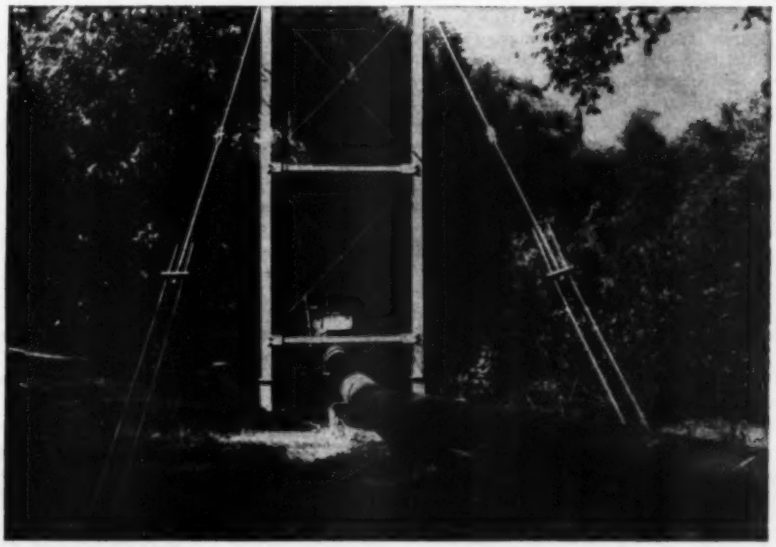
The average worker in our plant in 1947 had one doctor case for each six years of employment. However, the ten selected averaged one each six months. These ranged from an accident each four months for the man most often injured to each eight months for the man least often injured. As you might well expect, six of the ten were maintenance men who, we believe, are exposed to more hazards than the average worker in the plant.

A wealth of material for making proneness studies such as the Council has in its library became available in the ten records. However, we were most anxious to improve the ten and felt that, pending scientific studies, we would be remiss if we did not take immediate action to prevent further injury and possibly even death in this extremely vulnerable group. One intriguing case sustained these injuries: foreign body, left eye; contusion, left foot; fracture, left heel; laceration, left index finger; laceration, left knee; strained muscle, left lumbar region. This man was not left-handed, nor did he lack strength on the left side. He was a young fellow and could recall only one serious injury before coming to work for us; he fell off the barn when he was nine years old and broke his arm—the left one, of course.

Subscribing to the theory of a great American scientist that to have a theory, even a false one, is better than to attribute events to pure chance, since chance explanations leave us in the dark and theories lead to confirmation or rejection, we decided to intensify the use of techniques that have been proved of value in improving the safety of the average worker as a theory towards helping these people. The first was:

1. Talk with the Division Manager

Our plant is composed of several divisions: the paper mill, including wood yard, pulp mill, power plant, etc.; the bag factory; the box factory; and the usual service divisions. Of our ten men, eight were in the Paper Mill Division and two in the Bag Factory Division. Our box factory had not



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been in operation long enough to have any employees in the group. Each of the men had a talk with the manager of his division in the presence of the man's immediate supervisor. Our management group had serious reservations about this step, because it pointed out so clearly to the man that he got hurt too often and failed in an important part of his work. It was decided, however, to state the facts plainly lest our failure to do so would contribute in the future to more accidents by failing to bring the past ones properly to the worker's attention.

The managers emphasized and re-emphasized that their talk was not a warning of discharge or discipline, but was recognition of an unsafe condition and notice of management's efforts towards correcting it. Our fears about this technique were soon allayed. Several of the men were shocked to learn that they were injured more often than their fellows. The records were shown to them. Others felt that their injuries were due to circumstances beyond their control. The managers explained to these that this was understood and that it was recognized that a man would not purposely injure himself. The managers outlined in these individual meetings the things that would be done to assist the men to avoid injury, and solicited their co-operation.

At this point it might be well to say that we have not attempted to evaluate the different techniques against one another, since we felt that they were each an important part of the approach. In my mind, however, this talk with the division manager ranks probably at the top in value.

2. Thorough Physical Examination

All of us have heard, and probably even speculated ourselves, that an accident might have been caused by poor physical condition. Too, all of us know the sense of well-being that we have following a thorough physical examination when the doctor has said that we are in tip-top shape. Besides these psychological values, there was the good possibility that we might find conditions that needed treatment. The value of this technique was readily grasped by the participants.

Each of the ten was given a thorough examination by our company doctor. It was the plan, if indicated in the individual case, to do X-rays, blood chemistry, etc. However, the findings were essentially negative, so no extensive diagnostic procedure was deemed necessary. In fact, the doctor said that two of the men were as fine physical specimens as he had ever seen and the others were in good health and condition, having only the small disabilities to be expected in the general population at their age. The doctor allowed ample time for each man to give his history and talk over his problems. No conditions were found which required surgical or medical correction, nor were any found which apparently contributed to the high injury rate. The doctor did notice that all of the men but one tended to have a higher nervous tension than his average patient.

3. Examination by Opthalmologist

Much thought has been given to the part that poor vision, poor depth perception or other failings in eyesight might have contributed to accidents. The men were sent individually to the eye specialist who took ample time with each patient. Particular emphasis was devoted to depth perception. However, the findings on depth perception were not significant. We think we hit pay dirt here, however, as five of the ten were given prescriptions for glasses and two were recommended for minor surgery.

4. First Aid Course

It is widely known in the safety profession that a person who has studied a first aid course is less likely to get hurt than one who hasn't. I have seen first aid courses used numerous times as a safety device and never fail to reduce the accident record. In talking over our general plans before we started work on the ten, we had considerable reservation as to the advisability of seeming to single the men out. So with this in mind, we had previously made arrangements for several other men to participate in the first aid course. After the talk with the division managers, however, we felt that this precaution was not necessary. Nevertheless, we continued the others because plans had already been made.

We used the American Red Cross Standard First Aid course, taking 18 hours to finish. The classes, two hours each, were held during the work day on consecutive days until finished. Arrangements were made for the shift workers to remain on the day shift during the course.

5. Interview

Times without number following a serious accident, all of us have heard that it was most probably caused by the injured having some problem on his mind. In some cases we have even known of financial worry or domestic trouble which we strongly felt may have been responsible for an accident. It seemed logical to seek out problems that might be bothering the ten men who were injured so often.

The aim of the interview was not in the nature of counseling, but more of giving the man an opportunity to "get things off his chest." It was felt that in order to do this properly, the interviewer had to be actively and expressively sympathetic and not appear critical to the men, regardless of the ideas or actions talked about.

Nine of the ten responded to the interview in a wholehearted "bars let down" fashion. One, while entirely cooperative and courteous, kept his guard up securely. A solution for this case did not occur to us until too late; but, when we use the technique again, we will prepare for at least two interviewers, so that where one fails, the other can take over. Our interviewer felt that this fellow was too poised for him to handle.

Two minor financial problems were uncovered and the men were sent to the plant credit union, where help was given.

No problems were discovered that we could feel were responsible for the gross injuries to the group. Of course, the strong possibility of worry over an immediate temporary problem causing a specific injury was not explored in this clinic.

The interviewer noticed a higher nervous tension in each of the men than is noticed

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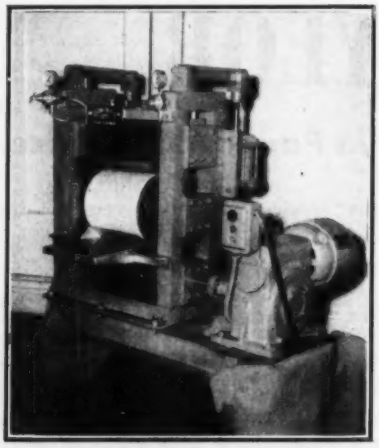

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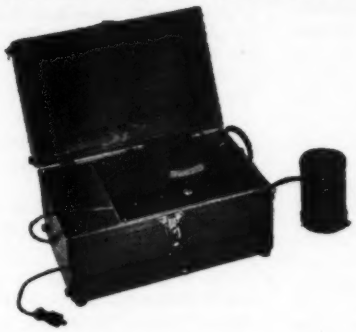

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in the general population. This tension persisted even after rapport was established and was expressed by constantly changing positions, crossing legs, etc. One man unlaced his right shoe completely five times during the interview.

One other fact established in the interview was the man's opinion on why he was injured more often than his fellow workers.

6. Follow-Up

Each month since the clinic the safety man has visited each of the ten workers and his supervisor individually and privately. The follow-up has been simple with the men: "How's tricks?" and then a short conversation. With the supervisor, the fact that these men need more safety attention than the average has been emphasized.

The foregoing devices have been our simpl approach. The value of most of them are apparent and have probably been useful to each of you with your own safety problems. We feel, however, that there is one value that can be easily overlooked. For lack of a better term, I'll call this "Special Attention." It is simply the theory that if a person is sympathetically noticed over and above his fellows, he will attempt to win the approbation of the noticer.

Maybe you would like to know something about the ten:

They gave three reasons for getting hurt. Four felt they were injured by too close attention to the job they were doing. Two felt that they were hurt by the acts of other people without, however, blaming the other people. One felt that he was hurt by a combination of these two. Three had no opinions.

The supervisors ranked these men as equal to their fellow workers as to production; five above average in the crew; four average; one slightly below average.

Psychological tests were available on nine of the men and showed that eight were above average in manual dexterity. This is confirmation of the theory which has been explored at several different places correlating high incidence of accidents with above average dexterity. Three had urban and seven rural backgrounds. There were no southpaws.

More light might well be shed on the accident proneness of these ten men, if it were possible to probe deeper into their psychological make-up. Pioneering work, seeking the cause of injuries in psychic maladjustments, has been done and is going forward at a rapid pace today. It might well be that the coming years will see the psychological maladjustments of the accident prone discovered and treated by psychologists and psychiatrists in the same fashion as injuries that deform and hemorrhage.

While recognizing that our statistics would be much more conclusive if a longer time had elapsed, nevertheless we are convinced that the accident prone can be helped —and that the accident prone are truly worth helping.

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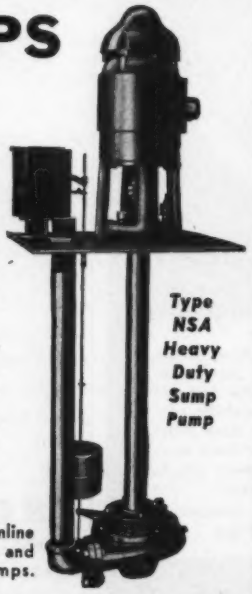

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Abridgments in this section are from papers presented at the joint meeting of Southern and Southeastern Divisions of the American Pulp and Paper Mill Superintendents Association, Atlanta, Ga., October 21-23, 1948.

History and Growth of Newsprint Industry in the South

W. L. McHale, Gen. Mgr.
Southland Paper Mills Co.

The paper industry in the United States had its beginning in New York and the New England states, first utilizing rags and linen waste. Later when wood pulp was brought into use as a cheaper and more abundant raw material, the industry spread through the North Eastern timberbelt using the dense stands of spruce. It was in this area that the newsprint industry expanded and flourished within the limits of the available wood supply. The industry later spread to the forest areas in the middlewestern states, and in some degree to the West Coast.

At the turn of the century, the growing demand for newsprint made it necessary to reach out further and further for pulpwood supply, leading to the establishment of new industrial areas on the Continent. Canada, with its vast timberlands and numerous rivers, capable of supplying transportation for pulpwood as well as power and water for pulp and paper mills, was the logical direction in which the paper industry was to spread. The apparent limitless stands of spruce along the coast line and inland areas were the ideal raw material needed to meet the ever increasing demands for newsprint, inspiring industrial leaders to construct many new mills and open up new frontiers during the next thirty years.

As this great growth was being brought about in Canada the production capacity of newsprint in the United States mills remained almost static, reaching the peak annual production of 1,680,000 tons in 1926. The annual U. S. production decreased gradually from that year until 1938 when the tonnage was but one-half that of 1926. During the same period, the tonnage from the Canadian mills increased more than 150 per cent.

It was about 1936, when the newsprint production was on the decline in the U. S. mills and on the increase in the Canadian mills, that consideration was being given by industrial leaders and publishers in the South to the feasibility of manufacturing newsprint from southern pine. Such a mill, successfully operated, would provide new use for an abundant raw material and further augment the supply of newsprint for American newspapers which are, by far, the greatest consumers of newsprint in the entire world.

Industrialists and business men in Lufkin and the East Texas timberbelt area visualized the possibilities and the importance of such a development. Chief among these industrialists was Ernest L. Kurth, who, despite heavy responsibilities and manifold interests, gave unselfishly of his time and talents, working in collaboration with Louis Calder and Albert Newcombe of the Perkins-Good-

win Company, to plan a course in developing this pioneering industry.

An Organization Committee was formed in January, 1937, to co-ordinate all efforts, decide on financial structure, appoint a consulting engineer, and select a site for the mill. George F. Hardy's organization, who were employed as engineers, made a survey of various strategically located sites in the East Texas timberbelt area culminating in the selection of Lufkin as the logical location of the first southern newsprint mill—for at Lufkin they had the available wood, water, fuel, and transportation necessary to insure successful and economical operation of not one, but several units.

Southland Paper Mills, Inc., began its corporate existence under charter in May, 1937, and during the months that followed the organizing group of industrial leaders and publishers proceeded with engineering and financial plans, surmounting numerous obstacles that normally confront such an undertaking. Progress was slow, however, and in June, 1938, the original charter was superseded by a new charter and the original company reorganized under the leadership of E. L. Kurth as president.

Financing the first newsprint mill in the south, like financing many other untried enterprises, was beset with numerous difficulties, but the integrity and fortitude of the company officials were the motivating forces that induced individuals and publishers to contribute their dollars in excess of the required private capital. This was an important contributory factor to the successful culmination of negotiations with the R.F.C. for the major portion of the total capital needed to construct this new industry.

Lufkin is somewhat centrally located in the vast area of East Texas pine timberlands, offering favorable conditions for procurement as well as for transportation of pulpwood both by rail and highway. The large acreage of the local lumber companies, who were also interested in the Southland project, was made available through agreement for selective cutting and thinning operations, which, together with cuttings from private lands, national forest, Southland properties, and through contractors assured the mill of a continuous supply of pulpwood needed for the first unit as well as for long range planning.

As a continuous supply of clear water was also of prime importance it was deemed necessary to make a careful and accurate appraisal of the water bearing sands in this area. Surveys made by U. S. geologists, working in conjunction with Texas State geologists, assured the company that adequate ground water, which proved to be of ideal quality for paper mill use, could be pumped from the deep water bearing sands. Here again it was necessary to take the long range view, extending the exploration work over a wide area to be certain that a perpetual supply could be obtained; not only for one unit mill, but for a possible second or third unit if conditions should warrant such expansion in future years.

Natural gas, available in abundant supply from Texas and Louisiana fields, was the most logical as well as the most economical fuel for steam and power generation. Self contained newsprint mills create enormous power loads in the pulpwood grinding process and by the use of natural gas fuel, Southland could develop its own power at a cost comparable with the price of hydro power used in the newsprint mills operating in the northern areas. The matter of fuel supply was simplified as the chosen mill site was adjacent to a large high pressure gas transport main direct from the gas fields.

The engineering studies and plans were made by George F. Hardy, a prominent paper mill engineer and an outstanding factor in the development of the paper industry in the United States and Canada. The proposed mill was of the same pattern and would utilize similar types of equipment then in service in other newsprint mills, following a general plan of low cost construction consistent with the greatest economy of operation. The engineer's report on the project, giving estimates of construction and operating costs, reflected the low costs of wood, fuel and other economies then prevailing in that section of the country.

The financing and all preliminary studies and surveys were about completed by December, 1938, when the contract for constructing the mill was awarded to Merritt-Chapman & Scott Corp. On January 15, 1939, ground was broken for the mill on a site about three miles east of Lufkin, and thus began the construction of the first mill to manufacture commercial newsprint from southern pine.

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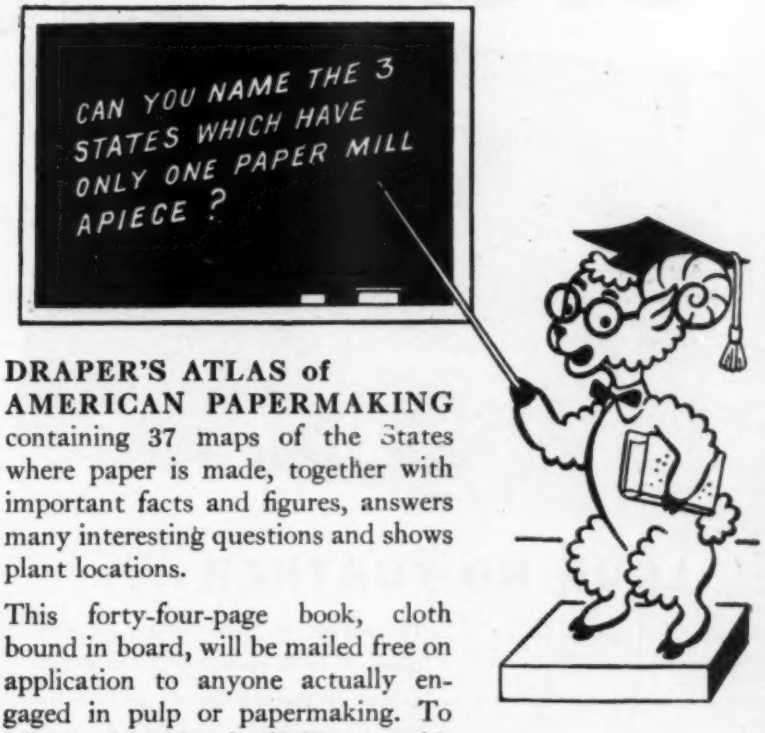

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Answer to Question No. 11 — Rhode Island, Colorado, Arizona

The year 1939 was taken up with engineering, planning, purchasing and constructing. This original mill which had a rated capacity of 150 tons of newsprint per day included a 234 inch high speed paper machine, hydraulic type grinders, groundwood deckers, screens, chests, broke beaters, and such equipment common to paper mills. The power plant included three high pressure boilers and two 6,000 kw turbines.

The preliminary plans also included a kraft pulp mill and bleach plant, but because of the added initial cost and possible delay in completion, that part of the construction was postponed and arrangements were made with the Champion Paper Company at Pasadena to supply the semibleached sulphate pulp required as part of the newsprint furnish.

Although ground was broken in January, 1939, actual construction did not begin until March, and following 10½ months of active and well co-ordinated construction work, the mill was completed and turned over to the operating crews for the first commercial run of newsprint on January 17, 1940. The usual troubles encountered when starting a new mill, of course, occurred at Southland, but they were of minor importance compared with the big question—could commercial newsprint be successfully made from southern pine?

It is needless to say that paper made during the trial runs could be classified as a good grade of newsprint, but the supervisors, technicians, and crews worked with the zeal of crusaders, gradually improving the quality of the product until it was made comparable with the average commercial newsprint, while today it rates well among the higher grades on the market. The first machine started operations at about 600 ft. per minute with outside predictions that a commercial sheet could not be made from pine at speeds higher than 1,000 fpm, but paper makers are not easily discouraged and it was not long before the machine was brought up to 1350 fpm, increasing the contemplated production from 150 tons to 170 tons per day.

Late in 1941, plans were under way for the construction of a 175 ton per day kraft pulp mill, including a cylinder machine and a bleach plant of sufficient size to supply semibleached sulphate for the newsprint machine. Construction was started in January, 1942, but due to many difficulties arising from the prosecution of the war, the kraft mill project was not completed until January, 1944. With its completion, however, the Southland mill was equipped to manufacture all of its own pulp, both mechanical and bleached chemical, needed for newsprint as well as a considerable amount of machine dried kraft pulp promptly allocated for use in the war effort.

Ever since the idea of a newsprint mill was conceived in Lufkin, the management envisioned not one but two and possibly three paper machines; but the trying experience of building a kraft mill during the war years made it advisable to stabilize operating conditions and postpone expansion.

With the termination of the war, our minds were once again directed toward the idea of a second machine and after the decision to proceed was made by the directors, orders were placed for all major equipment which could be obtained only on a long time delivery basis.

Construction of the second unit, consisting of a 238 inch machine and including all the component mill equipment, an enlarged bleach plant, and two large boilers and turbines, was begun in March, 1946. Progress was slow, due principally to late delivery of equipment, and the extension was not completed until March, 1948, two years after the start of construction, compared with a 10½ month construction period required to complete the first comparable unit.

The second machine was brought into production on March 29, 1948, at about 900 fpm. We plan to gradually step it up to at least 1500 fpm after completing some machine adjustments.

The two units are now producing newsprint at an annual rate of 120,000 tons. This tonnage represents a little more than two per cent of the newsprint consumed in the United States, so you can readily visualize the vast volume of total newsprint used by the daily and weekly newspapers in our country.

Further growth of the newsprint industry in the South is being undertaken at Childersburg, Alabama, where a two machine mill is now under construction by the Coosa River Paper Company. Time alone will tell what additional developments or expansions might be made in this industry to meet the economic conditions and business needs of the South.

STOP!

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The answer to your question of what pumps to use in your pulp and paper mill is here, in Ingersoll-Rand's bulletin No. 7022. It covers both horizontal and vertical pumps for *all* your needs. Capacities range from 5 to 75,000 GPM and heads to 3100 ft.

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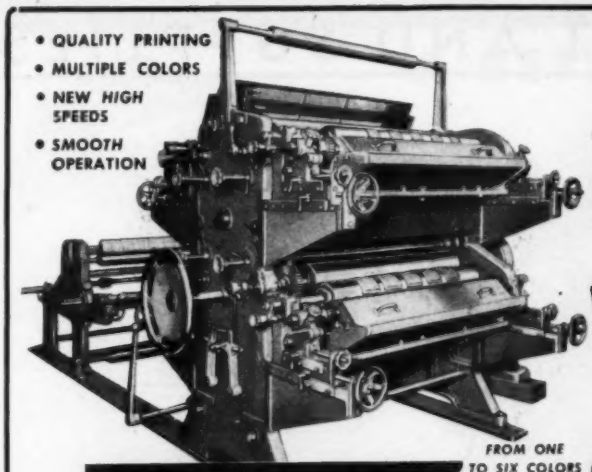

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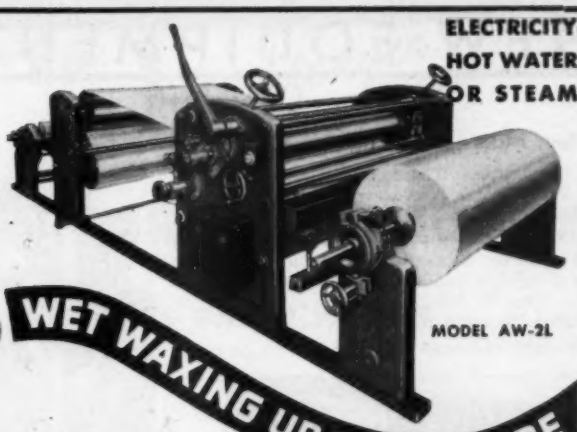

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The Story of the Jonsson Screen

SVEN FALHGREN
Bird Machine Company

A Jonsson Screen was brought over from Sweden, where it had been first introduced in the pulp mills, at least a dozen years ago, and that original Screen knotted something like 200,000 tons of sulphite stock before it was retired in favor of another Jonsson Screen of up-to-the-minute design now being built in this country by Bird Machine Company.

The screen consists essentially of an open trough or vat divided into two or more sections. The bottom or floor of this trough contains a screen plate, either perforated or slotted. The entire unit is suspended on four powerful springs. An off balance shaft, driven through V-belts by a 3 hp motor, imparts an intense, but precisely controlled circular, vibratory motion to the trough.

A noteworthy and exclusive patented feature of the Jonsson Screen is the design of this trough. It has a special shape that effects partial submersion of the screen plate and encourages quick and complete transport of rejects from feed to discharge. The only contact the rejects have with the screen plate is where the plate emerges from the stock. The plate is virtually horizontal at this point. It is practically dry. It represents no more than 15 per cent of the total screening area. It interposes no obstacle to rapid movement of rejects to the point of discharge. A shower at the discharge end whisks out the few good fibers adhering to the knots or rejects. Loss of fibers in the tailings is amazingly small—very much less than pulp makers are accustomed to expect. In one mill, Jonsson Knotters saved as much as three tons of fiber per day.

Rapid removed of rejects is a key factor of screen performance. In the Jonsson Screen there is no opportunity for knots, shives or dirt to bounce around on the screen plates and get broken up into fine particles that get through and are difficult to remove later on. To show you how fast the stock is handled by the Jonsson Screen, 100 tons of pulp at .95 per cent consistency, equal to 1750 gpm, passes through a Jonsson Screen with ¼ inch diameter perforated plate in one minute—the plate having a total screening area of only 16 square feet.

The Jonsson Screen first proved itself as a knotter on sulphite stock. It works like a charm. 100 tons per day is average capacity, using ¼ inch diameter holes. Capacity varies somewhat, of course, with the type of stock, its freeness and the percentage of reject in the stock. The best consistency for sulphite knotting is generally around 0.9 to 1.1 per cent.

While we are on the subject of sulphite stock, I'd like to mention the application of Jonsson Screens with slotted plates for fine screening. One mill I think of in the east has about a dozen of these screens on the job. The screening area of one Jonsson Screen is about the equivalent of six ordinary flat screen plates. Operating with a customary overflow of 10 to 20 per cent, the Jonsson Screen with .010 inch cut plates, has a capacity of 11 to 12 tons per hour or about 2 tons per screen plate. Fine screening can be accomplished at knotter consistency (0.8 to 1 per cent) without adding water between the two stages.

Getting back to the subject of knotting again, sulphate stock is handled by Jonsson Screens both before and after vacuum filters. It has been, and still is in many cases, the customary practice to knot wood pulp after it has passed over the vacuum filters. The use of ordinary rotary knotters ahead of the filters was prohibited by excess foaming.

Due to the special shape of the Jonsson Screen trough, stock is readily knotted before the black liquor is removed. A special submerged inlet is employed and open head boxes are dispensed with. The stock is totally enclosed from the blowpit to the knotter and streamlining the transfer area keeps the stock from cascading and mixing with the air. Close connection to the brown stock washers is recommended although not absolutely necessary.

The intense vibrating action of the Jonsson Screen tends to kill foam and use of higher stock consistency also helps. A consistency of 1.5 per cent is ideal for knotting soda pulp and Northern kraft. Consistencies as high as 1.7 to 2 per cent are recommended for that super foaming Southern kraft.

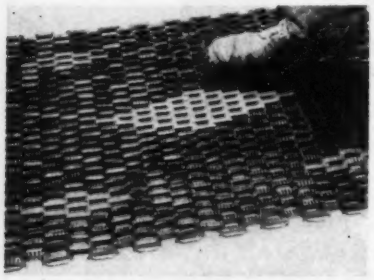
The advantages of delivering brown stock to the washers free of knots and chips are easy to imagine. Washing efficiency is very markedly increased. Maintenance of better, more uniform vacuum is assured. A substantial increase in black liquor recovery follows.

(Turn to page 1262)

NEW EQUIPMENT AND SUPPLIES

Floor Mats—Non-Slip

Corrugated mats made of especially compounded rubber links woven on 12 gauge spring steel wire provide sure, comfortable footing to stop slipping accidents and reduce worker fatigue have been announced by General Scientific Equipment Company, c/o John P. Eldridge, Advertising, 1327 Bankers Securities Building, Philadelphia 7, Pennsylvania.



Akro-mats are particularly adapted for use where moisture, oils, animal fats, acids, chemicals, solvents and abrasives are apt to be on the floor as the rubber resists deterioration. They are easy to clean and easy to handle, lie flat or roll up. They are recommended by leading safety engineers to increase efficiency, production and profits.

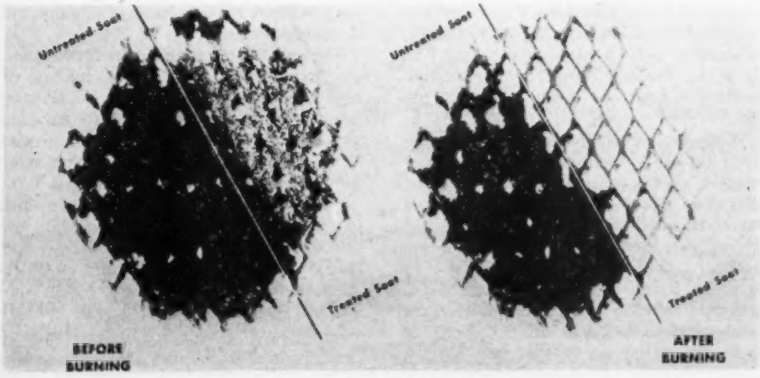
Soot Remover

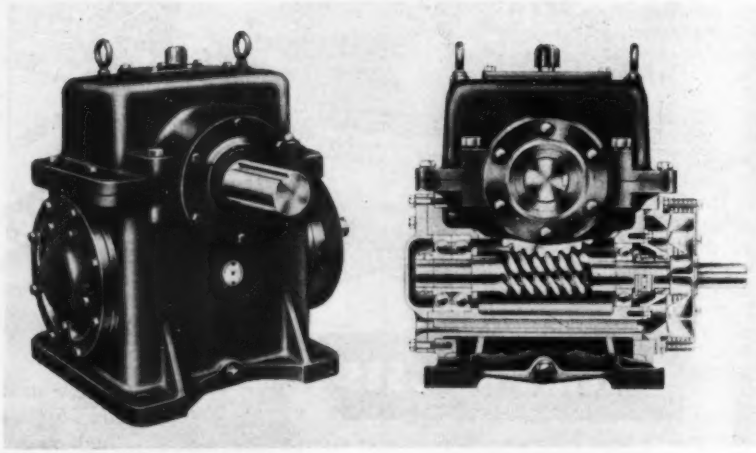
A new chemical soot remover has recently been put on the market by the manufacturer, National Aluminate Corporation, 6220 West 66th Place, Chicago 38, Illinois.

Research and development on this product, known as *Nalco* SR-150, were carried on by an independent research organization for National Aluminate Corporation. Following this work, Nalco engineers made extensive tests in plants using various types of fuel and firing methods, and developed a feeder for use in large furnace installations.

Nalco SR-150 removes soot by lowering its ignition temperature to 775 Fahr., where normal furnace temperatures will burn it off. Untreated coal soot burns at about 1135 Fahr.

Feeding may be done under normal furnace operating conditions. The material is furnished in powder form, which vaporizes completely on contact with the fire bed. These vapors penetrate the soot and bring about ignition.





Hypower Enclosed Worm Gear Drives

A new line of enclosed worm gear drives in both horizontal and vertical types, is announced by Foote Bros. Gear and Machine Corp., 4545 S. Western Ave., Chicago.

These *Hypower* units, the manufacturer states, are smaller in size than conventional drives of equal capacity. They deliver power at lower cost and because of their high thermal capacity, they permit the use of a smaller, less expensive reducer which means a savings in original cost.

Many features are said to contribute to the superior performance of these drives:

Increased load carrying capacity is accomplished by means of a new revolutionary technique in generating gears.

Increased thermal capacity is due to the immersion in the oil reservoir of an air channel cylinder through which passes a high velocity stream of cool air.

Leakage of oil is prevented by the use of carbon lapped ring type seal.

A reduction in size and weight is accomplished by refinement in design and improved methods of manufacture.

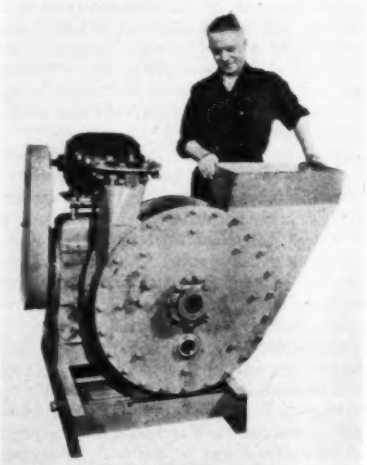
Better metallurgical control of materials and improved manufacturing techniques assure improved mechanical capacity.

Hypower worm gear drives are available in horizontal and vertical types, in a wide range of standard ratios to meet practically any need. These units comply with the speed-ratio standards adopted by the American Gear Manufacturers Association (AGMA), and the National Electric Manufacturers Association (NEMA).

Rotary Pump

A revolutionary rotary pump has been designed and is being manufactured by the Roto-Flo Pump Corporation, 249 N. Water St., Milwaukee 2, Wisconsin.

The manufacturer claims this pump can handle any material which has a viscosity



that enables it to travel through a pipe, and can transmit such material either vertically or horizontally, as required. Where the specific gravity and pipe friction are known the pump can be engineered to meet varying conditions and materials.

Versatility of the *Roto-Flo* Pump is apparent in the number and variety of its indus-

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trial applications, which include pulp stock in the paper industry.

According to the company, Roto-Flo Pump enables manufacturers to eliminate open conveyor systems, trucking, hand labor and high costs, in addition to speeding up plant output.

The pump operates on a time-tried principle, with the basic element consisting of a hopper and revolving blades. As the rotor revolves, the blades are carried under the hopper where they are consecutively loaded and material is carried around to the discharge opening. At this point the blade is smoothly retracted until it is completely within the rotor as it passes a scraper plate. The material is scraped into the discharge opening and forced through the pipe or conduit. The blade continues around and is gradually extended until it reaches the hopper where it is again loaded. The pump produces a positive, regular, and continuous flow of material.

Chemically Inert Valve Packings

A line of products listed as the *Chemlon* line is announced by Crane Packing Co., 1800 Cuyler Avenue, Chicago 13, Ill.

Round cross-section braided spoolform Teflon packings are available in sizes ⅛" to 1" in spools. The type of braided material

furnished are: (1) John Crane Style 706, treated with a specially chemically resistant lubricant that in itself is unaffected by acids or caustics to 300 Fahr.; (2) John Crane Style 704 braided of Teflon alone, and recommended for application where operating temperatures are beyond 300 Fahr.

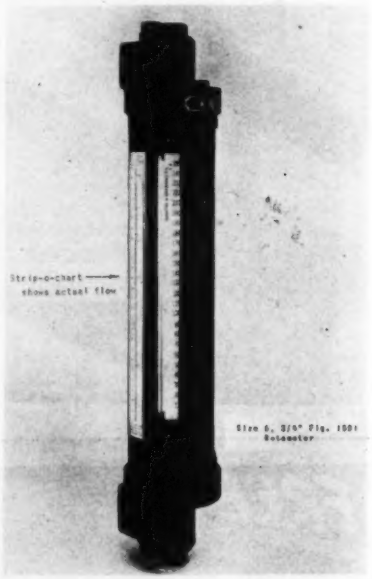
Teflon—well known, is E. I. duPont's chemically resistant flexible plastic. It is unique for its inertness. It is not affected by any solvent acid mixtures, or acids, or caustic solutions at temperatures to 690 Fahr. It is the most efficient sealing protection against the scape of liquids, fumes or gases of a highly inflammable or corrosive nature. Excessive wear of reciprocating rods, shafts, and valve stems are eliminated by the non-adhesive characteristics of Chemlon.

For installations where endless rings can be installed, Crane Packing Co. has perfected rings of Teflon (not merely machined bushings) that possess the required packing resilience.

In this type of ring, two forms are available: Style 772, which contains no lubricant, and Style 776 which is impregnated with graphite throughout the fibrous structure. These and other developments of Crane Packing Co., have resulted in Teflon packings in convenient and easily installed forms to meet all requirements.

Chart for Reading Direct Flow

Designed for attachment to SK Rotameters with rigid, cast iron frames, the *Strip-O-Chart* just introduced by the Schutte and Koerting Co., 12th and Thompson Streets,



Philadelphia 22, Pa., provides a convenient direct flow reading chart and eliminates the need for separate calibration charts.

The retaining strip for the chart is made of stainless steel, while the removable scale is reproduced on chart film. The Strip-O-Chart will be made to customers' specifications and will contain the P.O., calibration units and other identifying information.

Both the mounting holder and the chart can be shipped immediately after receipt of orders. Complete information on the meter for which the chart is intended should be included with orders.

Adhesive for Interleaved Carbon Form Sets

An adhesive designed for hand brush application is useful to printers who desire to make interleaved carbon office forms in sets. Applied cold by the back padding method to a stack of forms, the adhesive has the ability to penetrate between the sheets and carbon stubs and, after a short drying period, the stack can be separated into sets by cutting with a knife.

Manufactured by Paisley Products, Inc., Chicago and New York, it is reported that the new adhesive is a synthetic resin emulsion cement, white in color, and dries with

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a non-tacky, flexible film that allows the forms to feed properly in typewriters, billing machines and other office machines.

The manufacturer also states the adhesive is suitable for all paper office form stocks, will not discolor goldenrod colored papers, and the final sets will not fuse together in hot, humid weather.

Heavy-Duty Knife Grinder

A new knife grinder of massive proportions, with extra heavy duty construction throughout for precision grinding of knives up to 160 in, is now in production by Samuel C. Rogers & Co., 183-205 Dutton Ave., Buffalo 11, N. Y.

The new machine, *Type NT-160,* is designed for easy, accurate grinding of chipper knives, paper knives and doctor blades used in the paper industry and printing trades. It is also finding enthusiastic acceptance for the grinding of paper knives and chipper knives used in the fiber box and container industry and for chipper and planer knives used in veneer and other wood-working plants including furniture plants and planing mills. Its extreme flexibility also adapts it for squaring shear blades and other face grinding operations. The machine grinds flat or concave, wet or dry.

Time and cost-saving features are incorporated on this sturdily designed machine. An outstanding feature is the extra wide 5 in V-way on base and carriage permitting heavier grinding pressure and fast feed required for production and precision grinding. The transmission is of the simple clutch-type design with reversing gears, employing positive jaw-type clutch. Cross feed can be controlled either manually or by automatic control. A convenient hand wheel with graduated indicator and dial permits quick set-up to exact grinding angle. A two-motor drive is utilized, one 10 hp to drive 16 in segmental grinding wheel, separate 3 or 5 hp for carriage drive. Grinding head is mounted on massive back base and feeds automatically or by hand.

An exclusive Rogers feature is the automatic force feed oiling system for carriage bed and vertical drive shaft bearings. A built-in unit for wet grinding is standard equipment. Because of simplicity of controls and the heavy duty design of every part the machine gives years of maintenance-free service with no experienced operator necessary. The machine weighs approximately 8500 pounds. Machines of similar design are available down to 48 in capacity.

Tension Unit for Web Processing

A new machine which provides constant tension and constant velocity on a web of paper during printing has been designed by Black Industries, 1400 East 222nd St., Cleveland, Ohio. Similar machinery, based on the same control principle, will find wide application in the paper, textile, plastic, leather and rubber industries and in the metal fabricating field employing coiled strip of ferrous or nonferrous materials.

Such machines will maintain constant tension over a wide range—from a few ounces to hundreds of pounds—to meet the conditions imposed by the material under processing and regardless of the tension in the web of material as received. Once set, tension is under control at all times regardless of speed, and it remains constant during stops in the processing operation.

Machines have been built to operate at speeds as low as 60 and as high as 3200 fpm. They are available as winding units, unwinding units, or both as the processing operation may require.

Ready-Mix Concrete Patch

A new product for high-speed repair of concrete floors is announced by United Laboratories, Inc., of Cleveland, Ohio. This new development, known as *Tampatch,* is applied to broken, rough or uneven concrete surfaces, interior.

One of the outstanding claims of this new product is its ability to withstand heavy traffic loads. In addition, the floor may be placed in service almost immediately after the necessary repairs have been made, thus avoiding the complete closing off of such areas for lengthy periods. Traffic over the area soon smooths out the repaired section by a compressing action. The product is delivered in complete ready-mixed form, ready for use. Unused material may be kept on hand and ready for application as needed.

Jonsson Screen

(Continued from page 1257)

Squeeze rolls may be used on the filter drums to obtain maximum removal of black liquor because there is no longer the possibility of damage to the wire cloth, as there would be with stock full of knots and chips.

Knots rejected by the Jonsson Screen may be returned for further cooking or put through a defibrating unit.

The savings resulting from knotting ahead of brown stock washers are very substantial. One mill estimates savings in salt cake amounting to ten cents or more per ton of pulp. Reduction in the quantity of alum used as a neutralizing agent in the paper mill adds to the savings.

Jonsson Screens having a total screening area of 16 square feet and equipped with a ⅜ inch diameter perforate screen plate handles 100 to 150 tons of kraft per 24 hours. For the knotting of soda pulp, ¼ inch holes are employed. Capacity varies, of course, with the proportion of knots and uncooked chips in the stock. Excessive amounts, resulting from very raw cooks, will bring down the screen capacity to nearer 100 tons.

The practice of knotting ahead of brown stock washers is becoming so widespread, and its advantages so outstanding, that it bids fair to become standard practice throughout the industry.

Groundwood knotting is also a job for the Jonsson Screen. When the mill layout permits, bull screening and knotting can be combined to excellent advantage in the Jonsson Screen. It gets the long, narrow slivers that are apt to get through with the stock in other types of knotters. Knotting capacity is on the high side—up to 150 tons per 25 hours, through ¼ inch diameter holes is not at all unusual. Consistencies as high as 2½ per cent are easily handled.

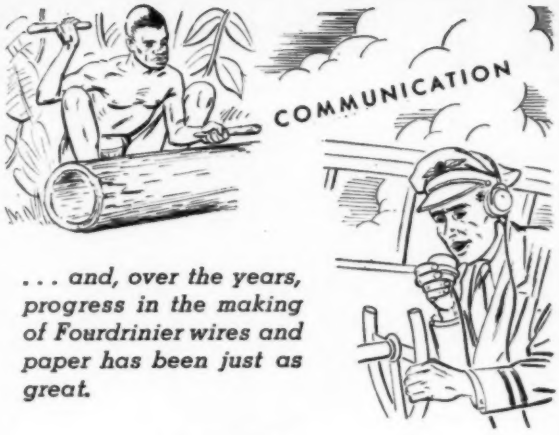
Fine screening of groundwood using perforate plates of .0625 inch diameter or smaller awaits only the assurance of plates able to withstand the necessary vibration. It looks as if they would be available in the near future if not immediately. Horsepower per ton of accepted stock shows a great reduction in favor of the Jonsson Screen—as little as .108 hp per ton. Compare this with the power required for other types of fine screens. Jonsson Screens are now operating as fine screens on groundwood and the performance of the plates is being checked.

It is important to select the proper open screening area in order to prevent matting and loss of capacity. We have found that cutting down the open area from, say 28 per cent to 14 per cent, we doubled the capacity. Perhaps too much open screening area drains the water off too fast and permits the fibers to form a heavy mat that walks over with the rejects. At any rate we get a capacity of 50 tons per 24 hours with a ⅜ inch diameter perforate plate and about 25 tons with a 5/16 inch plate. These capacities increase as the degree of refining is increased. Jonsson Screens ahead of the refiners for final treatment effect considerable power savings. With selective screening the accepted stock from the final line may in many cases be of sufficient quality to dispense with further refining. The rejects from the primary and secondary screens may go to a refiner and back to the primary screens.

The Jonsson Screen has become the accepted screen for board and filler stocks. Strawboard offers an interesting example and the screening problem used to be considered a major one. Jonsson Screens are now being used in large numbers on straw stocks and seem to have the problem licked. One big mill with Jonsson Screens ahead of each machine increased production 7½ per cent due to reduction in machine breaks. Knuckles and cockle burrs are easily rejected. They used to get as many as 18 breaks a day. Now 24 hours of uninterrupted production is not uncommon.

Wastepaper and deinked stocks have occupied an increasing share of the limelight recently because of pulp scarcities and high costs. The removal of all undesirable matter—wet strength paper, cellophane, paper clips, rubber bands and so on, is easily effected with the Jonsson Screen and this with virtually no loss of good fibers. On cylinder mould machines, one screen per mould handles all the stock.

Jonsson Screens are replacing rifflers in some cases and used after the rifflers in others to get greatly increased production from fine screens by removing the foreign matter that would otherwise clog up the screen plates.



. . . and, over the years, progress in the making of Fourdrinier wires and paper has been just as great.

Unremitting research has done much to improve the quality and performance of Lindsay Fourdrinier wires.

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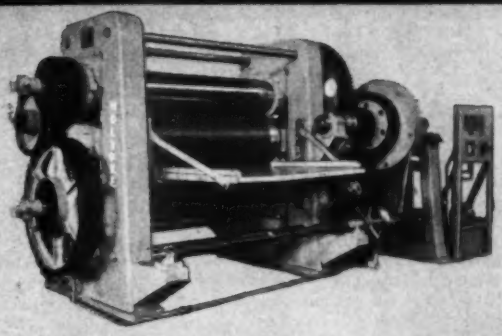

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TECHNICAL DEVELOPMENTS

These abstracts are of the latest developments found in the American and foreign press.

Eucalyptus Pulps Obtained by Chlorination

The eucalyptus wood chips were defibered in the laboratory by the Asplund process and then screened. This pulp was then delignified by repeated chlorinations, each one of which was followed by extraction with calcium hydroxide. The final bleach entailed use of hypochlorite. When 6% calcium hydroxide was used during the original defibering process, the subsequent chlorine requirements were reduced significantly. Furthermore, freeness of the bleached pulps were reduced and the strength properties were augmented. This low freeness was due in part to the presence of fine material from the medullary rays and this was removed by screening over a 200-mesh screen. The remaining fiber then consumed less chlorine.

About 75% of the chlorine was used in the first chlorine treatment, 20% in the second and 3% in the third, and the final hypochlorite chlorine then was only about 2% of the total, and gave rise to a stronger pulp (than when more hydrochlorite was applied to give the same degree of brightness). The Eucalyptus species studied for pulping were: *E. obliqua, E. regnans,* and *E. Gigantea.* A high degree of brightness and strength was obtained and the yields ranged from 49-58% (based on the original weight of the wood).

Chlorine consumption amounted to 34 to 53% of the weight of the bleached pulp obtained. Apparently the high pulp strength are correlated with the hemicellulose contents of the pulp. J. L. Somerville. *Proc. Australian Pulp and Paper Tech. Association* 1, 74-94 (with discussion 95-8) (1947); through *Bull. Inst. Paper Chem.* 19, 14-15 (1948).

Fiberboard Waste and Anaerobic Methane Fermentation

A report is given on investigations for handling the waste liquor from a proposed fiberboard mill on the basis of B.O.D. determinations, estimated volumes and stream flow records. The proposed plant will utilize 425 cords of hardwoods and pine per day, with about 390 tons of wood pulp to be processed during this period. No chemicals are to be employed, but the steaming operation used causes the liberation of carbohydrate material which must be washed out of the pulp. These washings constitute a serious disposal problem. At present the utilization of these sugars would not be feasible in the production of yeast or alcohol.

The available methods for reducing the biological oxygen demand of these wastes were studied. These included biological filtration, activated sludge formation, anaerobic fermentation, and lagooning. It was shown by calculation that 44.5% of the B.O.D. should be met by the dissolved oxygen in the stream. In consequence, 55.5% must be removed by other means. The authors' laboratory experiments would indicate that anaerobic methane fermentation would be 94.1% efficient in actual B.O.D. reduction for a two-stage digester with a five day retention period. The proposed process involves a two stage anaerobic digestion of 70% of the waste, after the addition of 100 parts per million of nitrogen (introduced as ammonia).

The total cost of chemicals is estimated as about $30 per million gallons. Stream flow studies indicated that an 80 million gallon lagoon would be sufficient for use as a holding basin during periods of low stream flow, but that during the greater part of the year the lagoon would not be required. A. M. Buswell and F. W. Sollo, Jr., *Sewage Works J.* 20, No. 4, 687-94 (1948) through *Bull Inst. Paper Chem.* 19, 6 (1948).

Importance of Total Solids in Sulphite Waste Liquors

The author shows how the total solid content of a waste liquor (which is the organic solid content plus the ash content) is correlated with the degree of pulping as well as with the alcohol yields that can be obtained from the liquor. For example, the higher the Björkman number of a pulp, the lower was the total solid content of the liquor, and the higher the solid content, the greater was the potential alcohol yield. The relationship permitted the calculation of the annual alcohol production.

The author also shows that decreases in alcohol production are correlated with the lime content of the liquor. The relationship between alcohol yield and length of cooking period is discussed, as are the effects of intensive fermentation (*e.g.* Merck's procedure) on alcohol yields, and the importance of *p*H and temperature. (See preceding abstract) Otto Wurz. *Papier-Fabr. Wochenbl. Papierfabr.* 1944, 356-8 (In German).

Measurement of Paper Stiffness

A simple apparatus was devised to test the stiffness of paper and a sketch and halftone are included. The author discusses the possibility of applying the formulas for the elasticity coefficient and elastic curvature of a steel strip (fastened at one end) to the measurement of paper stiffness. The errors and modifications in these formulas and their validity ranges are discussed. Whereas the modulus of elasticity of steel is quite well defined, this is not the case for paper. The bending strength of paper appears to be related to the weight per unit area and formulas are given for calculating the bending moment.

In the stiffness test, the paper strip is so placed under a metal block that a little over half of it (51 mm. of the 100 mm. long strip) protrudes. Through a perforation 1 mm. from the protruding end of the strip, weights ranging from ten to 5,000 milligrams may be attached. The metal block holding the strip is itself attached to a large wooden cube one face of which shows a scale that measures the angularity from 0 deg. to 90 deg. The weights on the test strip are increased until a deflection of 25 deg. from the horizontal is attained, and the weight which just causes this deflection serves as a measure of the stiffness of the strip, formulas for the computation being given.

Tabulated stiffness data are included for various types of paper and board, and the general applicability of the method is discussed. P. M. Hoffman-Jacobsen. *Das Papier* 2, 170-7 (1948) (In German); Cf also *Svensk Papperstidn.* 50, 98-9 (1947) (in Danish).

Instruction at the French School of Papermaking

The associate director of the School of Papermaking at the University of Grenoble gives, in detail, the courses required of engineering students, and then also describes the far less comprehensive course given to future paper mill superintendents and foremen. Under certain conditions auditors who are not regular students are also permitted to attend lectures. M. Chêne. *Papeterie* 70, 194-5, 197, 199; 226-7, 229 (1948). (In French).

Protecting Papers Against Attack of Rodents

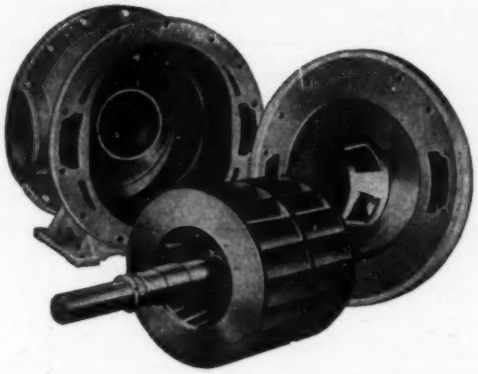
The results of a number of long-range animal experiments are given briefly, with illustrations. Protective agents inhibiting the rodent attack are incorporated into the beater. The best inhibitors were found to be barium derivatives of nitro- and chlorophenols as well as certain sulphonic acid derivatives (for example, the barium salt of naphthol yellow S). Other effective agents were barium derivatives of mercaptan-benzthiazole and of ortho-hydroxydiphenyl.

It is clearly pointed out, however, that these agents (which prevent attack by gnawing) never offer complete protection against the rodent. The animal also tears the paper with its nails, and this is especially true when it attacks paper bags containing foodstuffs, and when containers have been glued, folded, or sewn. Hence no chemical poison incorporated into the sheet is entirely satisfactory. Auxiliary protection may be offered by means of baited traps, aeration of storage chambers and the use of poison gas. August Noll Wochenbl. *Papierfabr.* 76, No. 7, 215-8 (1948) (In German).

Revelations of the Microscope

The resolving powers of the microscope, ultramicroscope, and the electron microscope are discussed, and the use of the instruments in studying changes in cellulose fibres during beating and sheet formation is emphasized. Twenty excellent photomicrographs serve to illustrate the discussion, and many of these are magnified showing the surface and internal structure of the fibers. Sixty-five literature references are included. Louis Widerkehr. *Bull. Assoc. Tech. Ind. Papetiere* 2, 35-66 (1948). (In French).

SIMPLICITY



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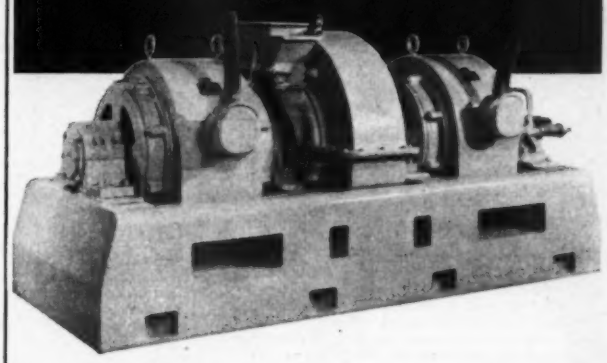

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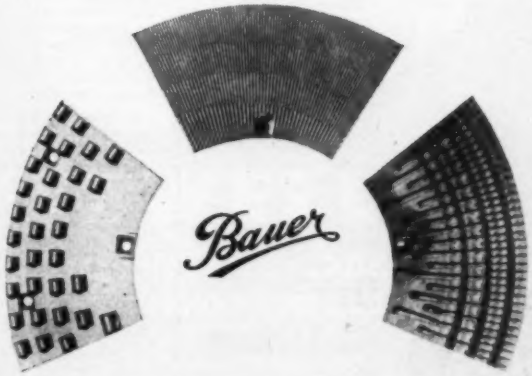

New Catalogues and Publications

Acme Steel Co., 2840 Archer Ave., Chicago 8, Ill.—An eight-page booklet containing photographs and specifications on Acme-Champion and Acme-Harrison Book stitchers may be had from this company, to assist in the selection of stitchers for bookbinding needs. Also available is a booklet, "Profit by Stitching," illustrating the complete line of Acme and Acme-Morrison Silverstitchers for stitching solid fibre and corrugated shipping containers. Specifications and application photos are included.

Allis-Chalmers Mfg. Co., S. 70th St., Milwaukee 1, Wis.—Construction details and performance features of sub-station transformers for industrial service, ratings 50 to 500 kva, are covered in a new eight-page bulletin released by this company. The bulletin includes description of core and coil construction of the units, tank design and construction, and dimension table. Copies of this booklet, No. 61B6014 A are available upon request. Another release is a 20-page planning and engineering guidebook for simplifying and speeding the layout of Allis-Chalmers load center unit sub-stations. Dimensional and arrangement information are given on units ranging from 100 kva to 2000 kva. Ask for Planning and Engineering Guidebook, 11B6895.

Black-Clawson Co., Hamilton, Ohio—Three new bulletins have recently been published by this company. In Bulletin No. 100-S is described the Miami Selectifier Screen, which is installed just ahead of the paper machine headbox for removing foreign material from paper stock. Bulletin 4-SB is descriptive of the Dilts-Cowles Classifiner for mixed paper systems, which is installed early in the stock preparation process to remove cellophane, cork, wet-strength paper, and other foreign matter entrained in the stock. Bulletin No. 95-S covers the Shartle Junk Remover, a machine for automatically and continuously lifting junk from the chute in the bottom of the hydrapulper tub, and at the same time salvaging fiber adhering to the junk. Other stock cleaning equipment is also described. All three bulletins are well illustrated, with photos and diagrams. Copies may be had from Shartle Bros. Machine Co., Middletown, Ohio.

The Brown Instrument Co., Division Minneapolis Honeywell Regulator Co., Wayne and Roberts Aves., Philadelphia 44, Pa.—A new 31-page catalogue, No. 15-13, on Electronik Potemtiometers is available from this company. Many schematic diagrams, photographs and dimensional drawings are used to illustrate the constructional features and operating principles of the instruments. The book also presents illustrative tables of various control forms, typical control systems, style selection tables, and other data helpful in the selection of the proper instrument. Also available from this company is Catalogue No. 7301, "Instrumentation for Treatment of Sewage and Industrial Wastes." It has been compiled principally to acquaint engineers, superintendents, and operators with the many applications of measuring and controlling instruments for sewage and waste processes. Applications, with schematic diagrams, include sewage flow, bar screen automatic operation, aeration tank, chemical mixing basins, digester (temperature and level), heating water controls, tryer temperature, contactor pH measurement, incinerator, boiler plant instrumentation, etc. Illustrative photos and dimensional drawings are used in the description of the various instruments.

Chain Belt Co., 1600 W. Bruce St., Milwaukee 4, Wis.—Of special interest to pulp mill operators is this company's new Bulletin No. 48-27, covering Rex Lumber and Pulp Mill Chains. It contains descriptions and illustrations of mill refuse, log haul, transfer, conveyor and power transmission, roller chain, cast tooth and cut tooth sprockets, and various attachments. Also described are belt conveyor idlers, flat spray nozzles, whitewater recovery equipment and traveling water screen.

Cochrane Corp., 17th St. and Allegheny Ave., Philadelphia 32, Pa.—A new publication issued by this company is Bulletin No. 4460, which describes the hydromatic single control valve, now standard equipment on Cochrane zeolite softeners and pressure filters. Write to the above address.

Downingtown Manufacturing Co., Downingtown, Pa.—Now available to papermakers is a new Catalogue No. 648, describing and illustrating this company's Cylinder Moulds.

Duriron Co., Inc., Dayton 1, Ohio—Included in a 20-page bulletin available from this company are the newest design features and complete exploded views of all parts, of their Model 40 Series Durcopumps. These pumps are intended for handling of corrosive solutions and are available in twelve alloys. Detailed information is given on accessories and modifications. Ask for Bulletin 815.

Enjay Co., Inc., 15 W. 51st St., New York 19, N. Y.—A complete manual on the processing and compounding of Vistanex, a compounding or alloying ingredient to improve various qualities of rubbers, and resins, has been published by this company. Combined with waxes and resins, Vistanex can be used in paper and plastic film coatings, for hot-melt laminates and heat-sealable coatings, pressure-sensitive adhesives, protective coatings, etc.

General Electric Co., Apparatus Dept., Schenectady, N. Y.—Two bulletins, GEA 5125, and GEA 5113 have been published on this company's high-speed synchronous motors and generators, in the "900 Series." A third bulletin, GEA 5063, covers synchronous motors for the pulp and paper industries.

Hamilton-Thomas Corp., Hamilton, Ohio—An attractive 16-page booklet, "Pictorial Review," has been issued by this company. It illustrates and describes the operations of the three divisions of the company, Economy Pumps, Inc., Liberty Planers, Inc., and Klipfel Manufacturing Co. Representative jobs completed during the past year are explained pictorically. Of special interest are dryers for a large paper mill, rotary dumping valves to dump refuse from a centrifugal separator for pulp materials, and double suction pumps for paper mills. Other illustrations show various types of pumps.

The International Nickel Co., Inc., 76 Wall St., New York 5, N. Y.—In a well-illustrated booklet, Nickel Alloy Steel Castings in Industry, are shown various applications for such castings, including their use in chemical equipment.

International Nickel Co., 67 Wall St., New York 5, N. Y.—An attractive and informative 20-page bulletin now available from this company is entitled "Salt As a Corrosion Problem." In addition to a brief history of salt making, it describes the part played by corrosion in the use of brine solutions by chemical processors.

Johnstone Engineering & Machine Co., Parkesburg, Pa.—A new catalogue describing their score cut slitter wheel grinder, has been issued by this company, and will be of special interest to papermakers. Ask for Bulletin 848.

E. D. Jones & Sons Co., Pittsfield, Mass.—Just issued by this company is a new, comprehensive 12-page bulletin for Jones Jordan users, entitled "Jones Jordans—Maintenance Data and Parts List." With the aid of instructions, pertinent drawings and illustrations, it explains the maintenance of Jones Jordans. The customer's assembly drawing may be attached, and space is allowed for noting of individual components. Ask for Bulletin No. EDJ-1022.

Korfund Co., Inc., 48-46-B Thirty-Second Place, Long Island City 1, N. Y.—Just released by this company is a new bulletin, G-101, listing the advantages and limitations of spring mountings, rubber mountings, and cork materials in the control of vibration, together with data on their installation and uses. More than 50 typical machine and equipment applications are listed in a Selector Chart.

Schutte and Koerting Co., 12th and Thompson Streets, Philadelphia 22, Pa.—Just released by this company is Bulletin 4-AB, descriptive of their steam jet blower and blast nozzles for moving large volumes of gas at low drafts. Complete data on dimensions, connection sizes, capacities and costs is given in tables, charts and drawings. Colored diagrams are used to illustrate typical applications of various types of blowers and blast nozzles. Requests should be sent to the advertising department.

W. W. Sly Manufacturing Co., 4700 Train Ave., Cleveland 2, Ohio—A new issue of Bulletin 98, "Industrial Dust Control," may be had from this company. It contains engineering information, including dimensions and capacities of dust filters. Paper is one of hundred different kinds of dust which are collected by these filters. The bulletin is well illustrated with photos of typical installations in industrial fields and diagrams of various types of filters.

C. J. Tagliabue Corp., 614 Frelinghuysen Ave., Newark 5, N. J.—Available from this company is Catalogue No. 1101-J, on Celectray Photocell, Electric and Light Ray Pyrometers. In addition to the description and illustrations of these instruments are included a price list and Bulletin 1251-E, listing charts and scales.

Wheelco Instruments Co., Harrison and Peoria Sts., Chicago 7, Ill.—Now available from this company is a new bulletin, "Electronic Controls," listing standard instrument models made by this company. The condensed catalogue illustrates and describes their line of indicators, controllers, recorders and combustion safeguards. It will be sent to inquirers using company letterhead, together with separate price list. Ask for Bulletin Z-6500.

Books

American Standard Safety Code for Power Presses and Foot and Hand Presses—The guarding of power presses has been complicated by the wide variety of operations and operating conditions, and because of these, a wide variety of guards and feeding methods have been included in this standard. The booklet is subdivided under several headings: scope and purpose definitions, references to other codes, requirements for press installations, safeguarding power presses at point of operation, foot and hand presses, other power press safety devices, making and setting dies, inspection and maintenance, and operation. It is 43 pages long, and contains a lengthy appendix, tables, and 28 illustrations. The booklet may be obtained at a price of $1.25 from the American Standards Association, 70 East 45th Street, New York 17, New York.

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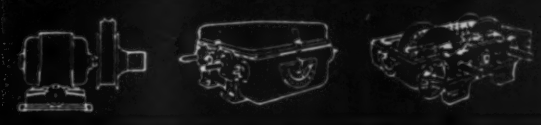

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Quotations to consuming mills, cents per pound or dollars per hundred pounds, f.o.b. New York, follow:

	per cwt.
Blue Overalls	8.00 to 8.25
Corduroy, Men's	6.00 to 6.25
Corduroy, Ladies'	6.00 to 6.25
Washables, No. 1	4.75 to 5.00
Percales	7.00 to 7.25
Light Prints, No. 1	7.00 to 7.25
Khaki Cuttings—	
Bleachable	6.50 to 6.75
Unbleachable	5.75 to 6.00
New White Canvas	11.50 to 12.00
New Mixed Blacks	5.50 to 6.00
Canton Flannels, Bleached	11.00 to 11.50
Shirt Cuttings—	
New White No. 1	11.00 to 11.50
White Shrunk	10.00 to 10.50
Silesias No. 1	8.50 to 9.00
New Unbleached	11.25 to 11.75
Fancy	6.25 to 6.50
Linen Cuttings—	
American	8.00 to 8.50
White	14.50 to 15.50
Grey	13.50 to 14.50

RAGS (Domestic)

OLD RAGS

Quotations to consuming mills, dollars per hundred pounds, f.o.b. New York, follow:

	per cwt.
Roofing—	
No. 1	1.35 to 1.40
No. 2	1.25 to 1.30
No. 3 and No. 4	1.05 to 1.15
Twos and Blues—	
Repacked	3.00 to 3.25
Thirds and Blues—	
Repacked	2.85 to 3.00
Miscellaneous	2.25 to 2.50
Whites, No. 1—	
Repacked	4.75 to 5.00
Miscellaneous	4.00 to 4.25
White, No. 2—	
Repacked	3.50 to 3.75
Miscellaneous	2.75 to 3.00

RAGS (Foreign)

ex dock New York City

NEW RAGS

	per cwt.
New Dark Cuttings	Nominal
New Mixed Cuttings	
New Light Silesias	
Light Flannelettes	
Unbleached Cuttings	
New White Cuttings	
New Light Oxfords	
New Light Prints	

RAGS (Foreign)

ex dock New York City

OLD RAGS

	per cwt.
No. 1 White Linens	Nominal
No. 2 White Linens	
No. 3 White Linens	
No. 4 White Linens	
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	
Extra Light Prints	
Ord. Light Prints	
Med. Light Prints	
Dutch Blue Cottons	
French Blue Cottons	
French Blue Linens	
Checks and Blues	
Linsey Garments	
Dark Cottons	
Old Shopperies	

ROPE and BAGGING

f.o.b. and ex dock New York City

	per cwt.
Gunny No. 1—	
Foreign	Nominal
Domestic	8.00 to 8.50
Wool Tares—	
Light	8.00 to 8.25
Heavy	8.50 to 8.75
No. 1 Scrap Bagging	7.25 to 7.75
Manila Rope—	
No. 1 large	6.00 to 6.25
No. 1 small	5.00 to 5.25
Sisal Rope—	
No. 1 large	5.50 to 5.75
No. 1 small	5.00 to 5.25
New Burlap Cuttings	8.00 to 8.50
Jute Threads—	
Foreign (Nom.)	6.50 to 7.00
Domestic	6.00 to 6.50
Strings—	
No. 1 sisal	5.00 to 5.25
No. 2 sisal	4.50 to 4.75
Soft jute	4.25 to 4.50
Mixed	2.50 to 2.75

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The following are quotations, dollars per ton, for No. 1 packing f.o.b. New York:

	per ton
Shavings—	
Hard White Env. Cuts	120.00—
Hard White, No. 1	100.00—
Soft White No. 1	90.00—
Soft White, One-cut	110.00—
Soft White, Misc.	70.00—
Fly Leaf, No. 1	50.00—
Fly Leaf, Woody, No. 1	40.00—
No. 2 Mixed Col. Woody	30.00—
Flat Stock—	
No. 1 Heavy Books and Magazines	21.00 to 22.00
Mixed Books	16.00 to 17.00
Ledger Stock—	
No. 1 white	60.00—
No. 1 Mixed (Colored)	45.00—
Manilas—	
New Env. Cuttings	80.00 to 85.00
New Env. Cuts, One-Cut	—
Extra Manilas	—
Manila Tab Cards, Free of Ground Wood	70.00 to 75.00
Colored Manila Tab Cards	45.00 to 50.00
Kraft	
New Envelope Cuttings	80.00 to 85.00
Trimmed Sorted No. 1 100%	45.00 to 50.00
New 100% Cor. Cuts	45.00 to 50.00
No. 1 Old Assorted	35.00 to 40.00
News—	
White Blank	70.00 to 75.00
Overissue	18.00 to 19.00
No. 1 Baled	14.00 to 15.00
Old Corrugated Containers	14.00 to 15.00
New Jute Corrugated Cuts	23.00 to 24.00
Mill Wrappers	10.00 to 11.00
Box Board Chips	7.00 to 8.00
No. 1 Mixed Paper	7.00 to 8.00

CHEMICALS

f.o.b. shipping point

Alum (Papermakers)—	
Lump, cwt.	4.05—
Ground, cwt.	3.80—
Powdered, cwt.	4.20—
Blanc Fixe—	
Pulp, bulk, ton	77.50—
Dry, barrels	85.00—
Bleaching Powder—	
Drums, cwt.	3.25 to 4.25
Casein (Domestic Standard)	
20-30 mesh (bags), lb.	
80-100 mesh (bags), lb.	31.00 to 32.00
Argentine, lb.	26.00 to 27.00
China Clay—	
Domestic Filler Bulk (mine) ton	10.00 to 15.00
Domestic Coating Bulk (mine) ton	15.00 to 25.00
Imported (ship side) Bulk (lump) ton	22.00 to 30.00
Chlorine—	
Tank cars (wks) cwt.	2.40 to 2.70
Gelatine (silicin), lb.	1.25 to 1.35
Glye. (C.P.) drums, lb.	.39½ to .40
Litharge, powd., bbl. lb.	.21¼ to .22
Rosin (Gum)—	
New York, per 100 lbs.	
E	8.35—
F	8.50—
G	8.80—
WW	8.95—
Rosin (Wood), carlots	7.45—
Salt Cake—	
Dom. bulk (wks) ton	24.00 to 28.00
Imp. bulks on dock (Atl. ports) ton (Nom.)	25.00 to ——
Soda Ash—	
Bulk (works), cwt.	1.10 to 1.20
Paper Bags, cwt.	1.30 to 1.40
Barrels, cwt.	1.50 to 1.60
Soda (Caustic)—	
Solid drums, cwt.	2.85 to 3.05
Ground and flake, drums, cwt.	3.25 to 3.50
Sodium Silicate—	
60 deg., 55 gal. drums, (works) cwt.	1.65 to 2.05
40 deg., 35 gal. drums, (works), cwt.	.80 to 1.45
Starch—	
Pearl, 140 lb. bags, cwt.	6.16—
Pearl, barrels, cwt.	6.16—
Paper, (Sp.) bags, cw.	6.16—
Powdered, barrels, cwt.	6.27—
Sulphur (Crude)	
(Mine) bulk, long ton	16.00 to 18.00
Talc—	
Dom. 100 lb. bags (mine) ton	20.00 to 28.00
Canadian	35.00 to 45.00
Titanium Dioxide—	
Barium Pig, bbls., lb.	18 to .18½
Calcium Pig, bbls., lb.	18 to .18½
Zinc Sulphide, bbls., lb.	11.50 to 11.75

WOOD PULP

Prices, dollars per short, air dry, ton, on dock American ports and f.o.b. shipping points with former OPA freight allowances, are:

Bleached sulphite, Swedish.	165.00—
Bleached sulphite, Finnish.	165.00—
Bleached sulphite, dom.	126.00 to 135.00
Easy bleaching sulphite	—
Unbleached sulphite, Swed.	140.00 to 145.00
Unbleached sulphite, Fin.	140.00—
Unbleached sulphite, dom.	125.00 to 130.00
Unbleached kraft, Swedish.	137.50—
Unbleached kraft, Finn.	137.50—
Unbleached kraft, northern.	120.00 to 125.00
Unbleached kraft, southern.	110.00 to 125.00
Bleached sulphate, Swedish.	165.00—
Bleached soda, domestic	130.00 to 135.00
Sulphite screenings, dom.	60.00 to 70.00
Sulphate screenings, dom.	60.00 to 70.00
Groundwood, domestic and Canadian	80.00 to 85.00

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Boards—	per ton
Binders	94.00—
Chip	90.00—
Chip, tube and can	95.00—
Chip, full blending	97.50—
Chip, sgl. mls. lined	95.00—
Coated, white patent .016	120.00—
.020 and heavier	110.00—
Kraft liner	79.00—
Filled News	90.00—
Container	90.00—

Book Papers—f.o.b. mill with quantity, weight, manufacturing and other differentials allowed:

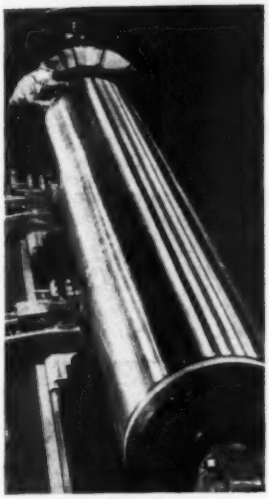
(Per cwt. in ton lots)

Uncoated (Untrimmed)

Book, White (M. F.)—	
A Grade E. F.	14.85—
B Grade E. F.	14.55—
C Grade E. F.	—
D Grade E. F.	—
No. 2 Uncoated Offset 4 sides, White	—
Machine Coated White (Trimmed 4 sides)	
No. 1 Glossy	20.15—
No. 2 Glossy	18.90—
No. 3 Glossy	18.25—
No. 4 Glossy	—
No. 2 Offset	14.60—
C1S Litho (Varnish)	—
C1S Litho (Non-Varnish)	—

Writing Papers—f.o.b. mill with zone, quantity, packing and other differentials allowed:

Rag Content Bond—	per cwt.
(In Ton Lots)	
Extra 100% Rag	52.30—
100% Rag	48.30—
75% Rag	38.70—
50% Rag	29.50—
25% Rag	26.35—
Rag Content Ledger—	per cwt.
(In Ton Lots)	
Extra 100% Rag	50.50—
100% Rag	44.50—
75% Rag	36.70—
50% Rag	29.50—
25% Rag	26.35—
Sulphite Bond—	per cwt.
Air dry, watermarked	—
No. 1 watermarked	18.50—
No. 2 watermarked	17.55—
No. 4 watermarked	16.35—
Sulphite Ledger—	per cwt. Zone 1
No. 1 watermarked	18.35—
No. 2 watermarked	18.05—
No. 4 watermarked	17.35—
Glassine (f.o.b. mill)—	per cwt.
Embossed (25 lbs. up)	—
Bleached (25 lb. up)	—
Unbleached (25 lb. up)	—
Greaseproof—	
Bleached (25 lb. up)	—
Unbleached (25 lb. up)	—
News—	per ton
Rolls, Standard (Contract)	100.00—
Rolls (Spot)	(Nominal)
Sheets	119.00—
Tissues (Carlots)—	per ream
White No. 1	1.85—
White No. 2	1.75—
Bleached Anti-Tarnish	—
Colored	—
Anti-Tarnish Kraft	1.85—
Manila	1.60—
Napkins, semi-crepe (12¼ lb. to M shts.) per cs.	.80—
Napkins, full crepe and emb'sed (12½ lb. to M shts.) per cs.	.80—
Toilet, Bleached (M. shts.) per cs	8.50 to 10.00
Toilet, Unbleached (M. shts.) per cs	8.50 to 10.00
Towels—	per case
Bleached	4.75—
Unbleached	4.00—
Wrappings (Kraft)—	per cwt.
Super-Standard	9.00 to—
No. 1 Wrapping	7.50 to 8.00
Standard Wrapping	7.00 to 7.25
Standard Bag	6.50 to 7.00
Variety Bag	—
Wrappings (Sulphite and Bleached Kraft)— (Rolls, f.o.b. mill)	
Bleached Papers—	per cwt.
M.F. & M.G. Waxing, 20 lb. (Carloads only (10,000 lbs.)	—
Drug wrapp., 35 lb.	—
Unbleached Papers—	
Com. Gr. Butch. 40 lb.	—
No. 1 Butchers	—
No. 1 Imit. Parch & Dry Fin. Groc. Sulphite, 30 lb.	—
No. 2 Imit. Parch & Dry Fin. Groc. Sulphite, 30 lb.	—
Steam Finish, 50 lb.	—
Water Finish, 50 lb.	—
Manilas—	
Envp. Mla., Sub. 16-40 (No. 1)	—
Envp. Mla., Sub. 16-28 (No. 2)	—
Envp. Mla. (Prices based on large sheets untrim'd ream-marked, in bdls.)	
Wrapp. Mla. 35 lb. up—	
No. 1	—
No. 2	—
M.G. Sulphite and Kraft (other than Waxing)	
Grade R20 lb.	—
Grade A-22 lb.	—



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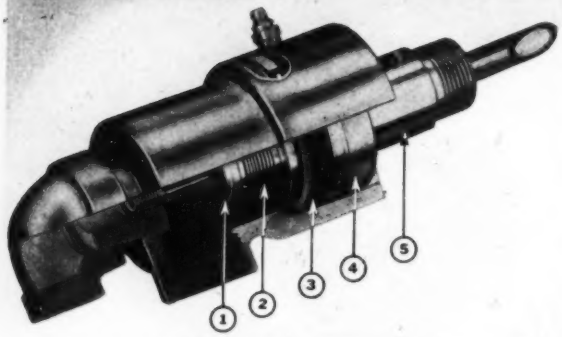

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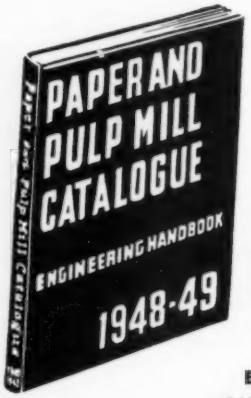

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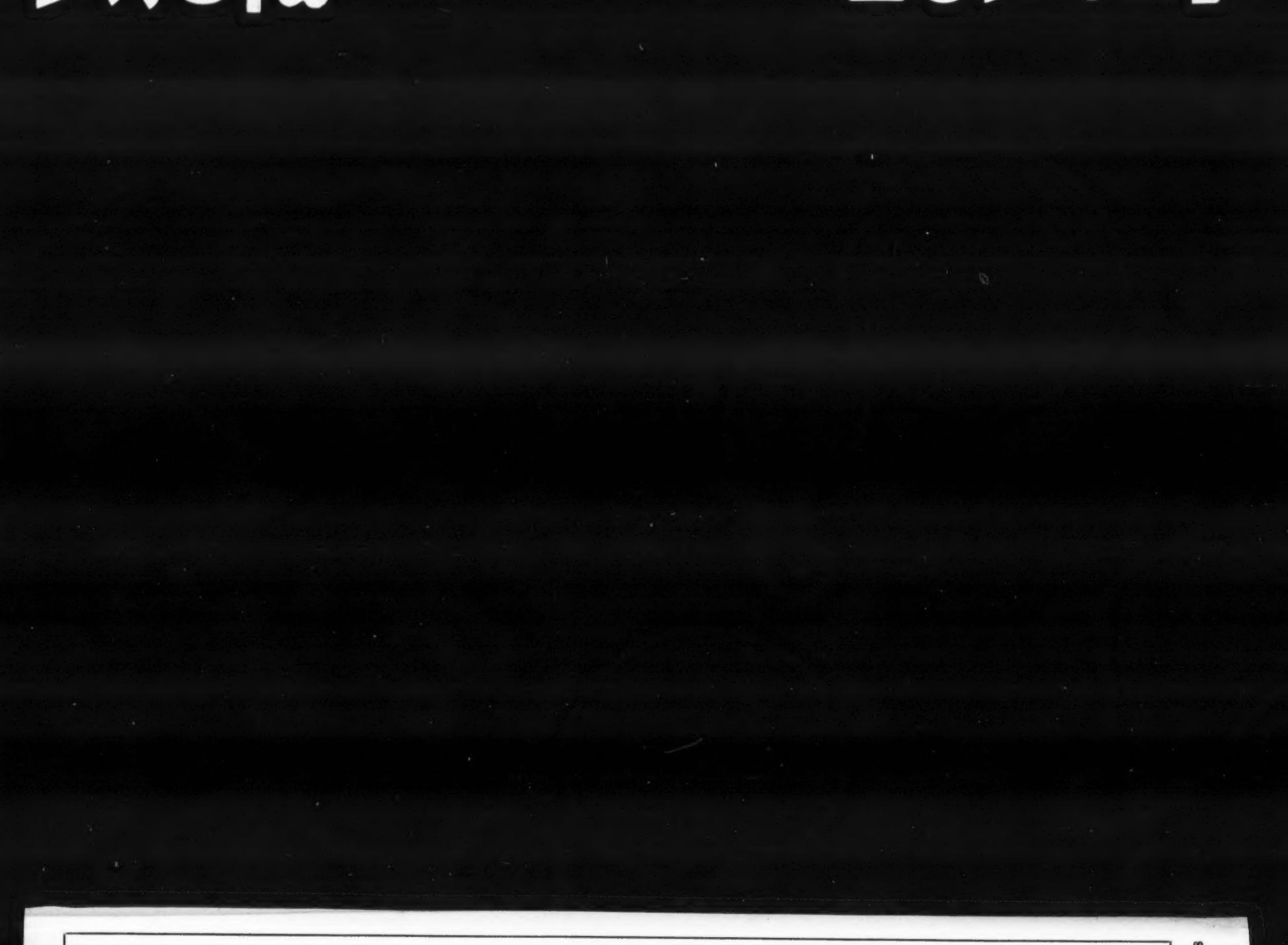

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TRUE Modern cylinder-machine operation — high-speed, continuous — calls for stiffer, stronger cylinder moulds *without great weight* increase. Cheney Bigelow has introduced cylinder improvements which meet today's requirements.

● It never pays to repair cylinders

FALSE In many cases Cheney Bigelow can put your worn cylinders in first class condition, repairing and recovering them at reasonable cost. Our broad cylinder experience enables us to tell quickly when repairs are *not* advisable; in such cases we report our findings promptly and fully.

● There's a new way to increase felt life

TRUE A new type cylinder seal introduced by Cheney Bigelow increases felt life because it operates at lower friction than the usual felt seal (it's round reinforced neoprene, self-lubricated by water). It eases the pull on the felt, reduces stretch, helps keep the felt open.

● Custom-built cylinders cost you more

FALSE *Every* Cheney Bigelow cylinder is custom-built, from specifications made up only after all mill conditions are considered. Your product, the freeness and consistency of your stock, drainage speed, speed range, chime ring wear, Ph, and many other factors are *all* important. Beginning with the correct specifications saves you time, trouble, and — in the end — money. That's why Cheney Bigelow *custom*-built cylinders actually cost *less*.

● Cheney Bigelow is a major producer of cylinder moulds

TRUE Cheney Bigelow has pioneered in the development of many cylinder features which are helping paper mills reduce costs, increase capacity, and manufacture a better product. Cheney Bigelow also manufacturers thickeners, dandys, wire cloth, Fourdrinier wires and other types of paper mill equipment. CHENEY BIGELOW WIRE WORKS, SPRINGFIELD, MASS.

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